Gas Journal

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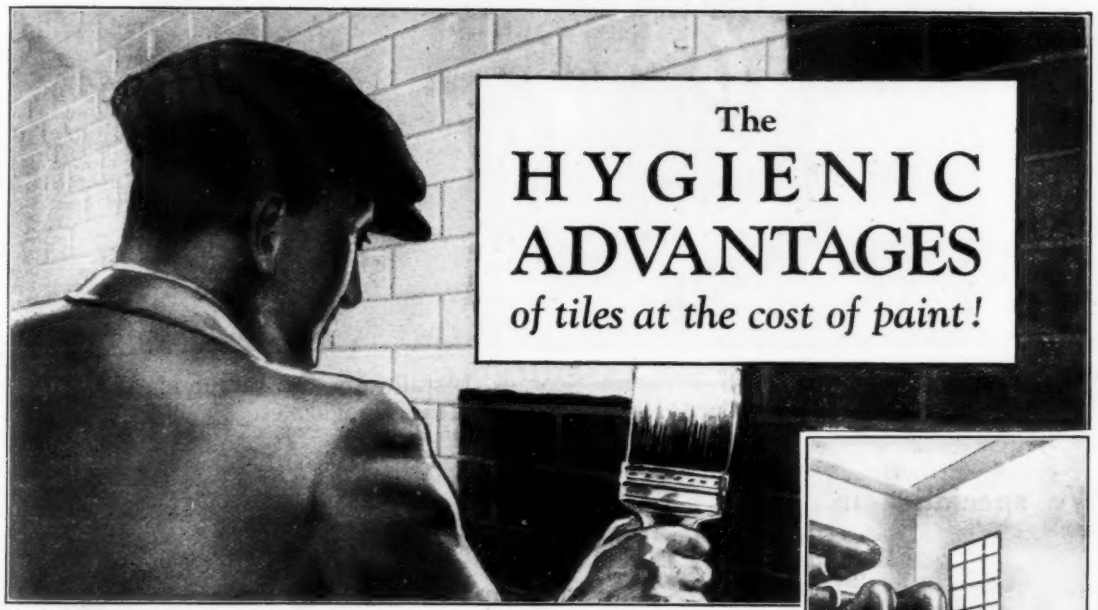

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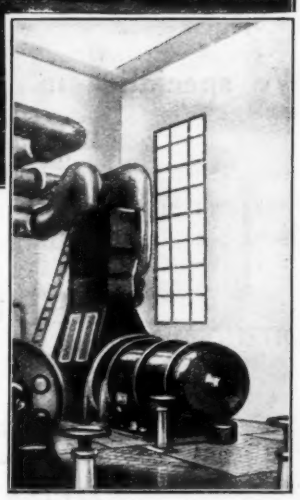

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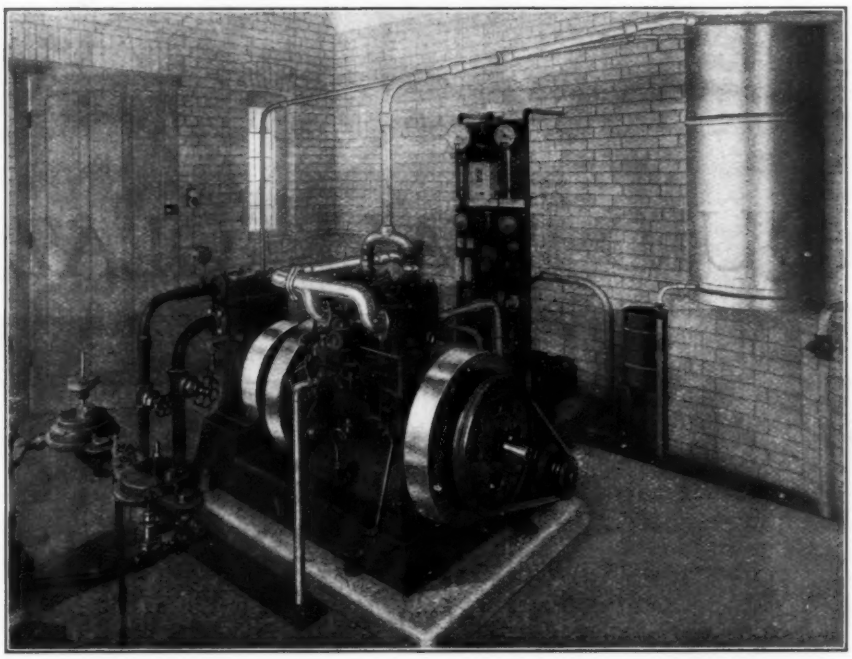

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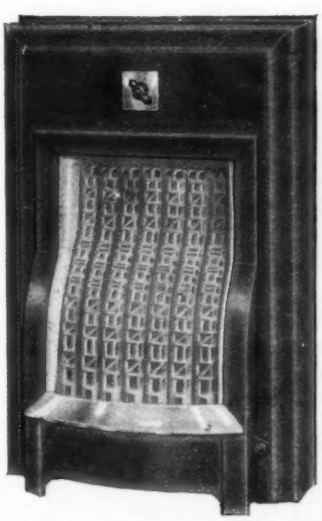

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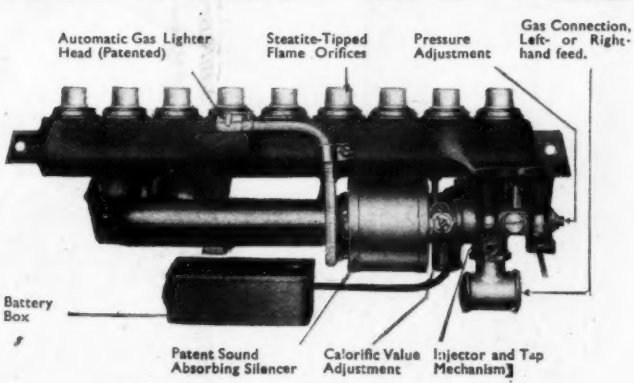

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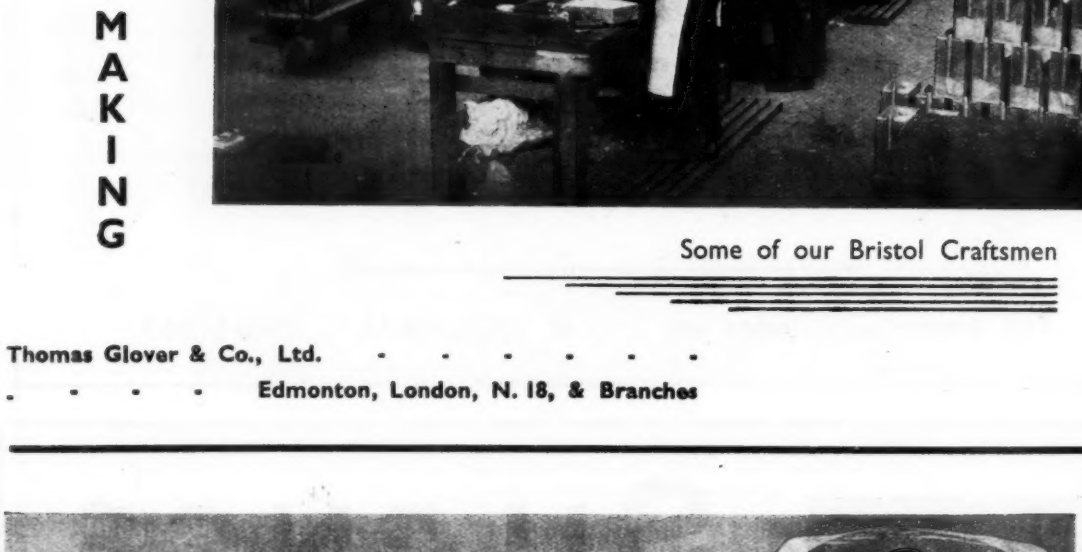


Gas Journal

DECEMBER 18, 1935

Vol. 212. 87th Year No. 3787

Editorial Notes

The B.G.F.

THE British Gas Federation has held its First Annual Meeting. With a view to encouraging free discussion it was decided that, as far as the Press was concerned, it should be an *in camerâ* gathering, and to those unable through any cause to be present it must remain a closed book. It is a matter for argument whether the curtailment of Press activity does in fact engender lively discussion—in other words, whether the reporter on such an occasion is regarded with trembling. However, we put this forward as comment rather than criticism, and are quite satisfied that the Council took the step which to their minds was in the best interests of the new Federation.

The B.G.F.'s first Report is published in to-day's "JOURNAL," and it shows clearly how intent our Industry is to achieve solidarity. That the future prosperity of the Industry depends on the measure of this solidarity —the presentation of a united front—goes without saying; and it is one of the happiest auguries of continued success that the B.G.F. has already welded stronger links to bind together the five constituent national organizations. To go ahead firmly and rapidly we need a common policy. Without in any way limiting the activities, cramping the style, of the individual bodies, the B.G.F. is in effect defining such a common policy. It will be noted from the Report that, to maintain the closest co-operation and to prevent overlapping of work among the constituent organizations, the Council has set up a Panel of Officers of these bodies. This Panel meets every month, considers all matters affecting the Industry as a whole, and reports accordingly to the Council, which is then in a position to base action on full knowledge of the views of the constituent bodies, and, therefore, of the members of the Gas Industry generally. To those with an appetite for the sensational or dramatic, the B.G.F. will have little appeal, but this will not interfere with the solid work of a Federation now well established.

The Federation has also held its Second Annual Dinner, at which the Press were invited to partake of bounteous hospitality and to comment in freedom. Like its predecessor, the function had an air of magnificence which has all too long been shunned by the Gas Industry. The guests were men illustrious in national affairs and public services. The speeches were distinguished, as indeed was to be anticipated, by polish, wit, and very sound sense. The limelight rightly focussed on a great public utility was followed the next morning by valuable and extensive publicity in the news columns of the National Dailies. The vast and brilliant affair was, in brief, a huge success, and to this success the remarkable organizing ability of Mr. J. R. W. Alexander contributed no small part. Every detail to ensure comfort and smooth running had been planned with nicety. Over eight hundred people left the gathering with the pleasantest of memories and surely with the conviction that the occasion served a very necessary purpose in the year's work of a great and growing Industry.

Our report of the speeches which will be found on later pages may perhaps not give quite accurately the exact tone of the speakers. Considerations of space have made it necessary to omit many a witty story which some of our readers who indulge in public speaking might have found useful. However, we faithfully record all of what we may be pardoned for terming the "substance;" and, as we have said, much of this substance—which in essence is recognition of the part which our Industry plays in the national economy—found its way into the daily newspapers. This well-merited recognition has been far too long delayed, and is as yet by no means general. The history of our Industry discloses an unworthy desire by its members to avoid publicity; it is primarily because of its unquestionable publicity value that we welcome so much the B.G.F. Dinner. There is, however, another phase of the gathering. We feel that it helps to inspire the personnel of the Industry with confidence, and confidence within—as we have emphasized over and over again —is the first essential to prosperity. A good slogan for us all would be "We want the best seats; we'll get them."

We believe that in course of time members of the Gas Industry will find more and more use for this annual event, and particularly those who are engaged on the undertakings side. A glance through the list of the "top table" which we give in this issue shows only a small part of the representatives of every phase of public activity who were guests, and those representatives of gas undertakings, both company and municipal, who were present must have been impressed with the opportunity offered by such a Function to themselves, their chairmen, their directors and committee men, to contact in circumstances of dignity and in the character of hosts with all shades of opinion and all walks of life of the great outside world.

Weighty and Otherwise

We know the B.G.F. dinner speeches will be read with the greatest interest. They were in general terms largely congratulatory, and while calling for attention do not invite critical comment by the converted. There is, however, a line of thought expressed by Colonel Carr, President of The Institution of Gas Engineers, in the acceptance of which we see more than an element of danger—the danger of complacency. We say this knowing full well that the last thing one could possibly attribute to Colonel Carr is a spirit of complacency. He is a born fighter, an exponent of thrustful policy, a successful invader of the enemy's camp. But frankly we dislike his comparison between gas and electricity. In a nutshell his argument is this: "Gas is a fuel; electricity is not. Electricity may be all right for lighting and power; but when it comes to heat requirements, gas—*because it is a fuel*—is essentially the nation's heating agent. It will not, cannot, be displaced by electricity, for electricity is not a fuel." Can this line of thought bear analysis?

Of course, we share Colonel Carr's conviction that electricity will not displace gas, though we think that we should struggle a great deal harder to retain the lighting and power loads we enjoy and to regain a large amount of territory lost by default. But gas will not be victorious over electricity in the vast heating field simply *because* gas is a fuel. Let us consider the matter a little further. The Oxford English Dictionary defines "fuel" as "material for fires, firing, coal, wood, &c." The "&c.," we take it, includes lignite, oil, peat, coke, and again &c. The word "material" debars it from including electricity, which the O.E.D. defines as a "peculiar condition of the molecules of a body or of the ether surrounding them, developed by friction, chemical action, heat, or magnetism."

Gas is ponderable. Produced, *via* heat, by chemical action it is, so to speak, continuously fed to the fire in chunks. That in itself means little; we should be most unhappy to go on feeding these chunks to the fire if nothing occurred. Fortunately, what happens when we turn on a gas fire tap and ignite the gas—not, we trust, with lighted match or taper—is that a "peculiar condition of the molecules of a body" (the definition of electricity) is set up. Thanks to this "peculiar condition" we can rest or move in comfort. This peculiar condition we know as heat can also be produced by electricity, which itself is a peculiar condition. We are not going to debate the advantages or disadvantages of being a peculiar condition before creating a peculiar condition. The requirement of the man in the home and the man in the factory is heat; and we cannot stretch our imagination sufficiently to believe that he is in the very slightest concerned whether the immediate cause of this heat is ponderable or imponderable. In any case the origin is the same—namely, the sun. There would be no gas without coal; and in this country, without coal, there would be no electricity. What has in fact happened, therefore, is that an imponderable—the sun's rays—has produced a ponderable in gas and an imponderable in electricity. This is all very interesting, but, we suggest, can have precisely no influence on whether the householder or the industrialist uses gas or electricity.

The consumer is concerned with such facts as safety, convenience, reliability, and cost. He demands a first-class heat service at the most economical all-in price. Gas can give this service—but *not* because it is *per se* a fuel. It scores over electricity because it can give better heat conditions at lowest cost. One has only to consider for a moment what would happen if gas could not be offered at a price less than, say, 10s. a therm and electricity was available at ½d. a unit. Does Colonel Carr suppose that gas would win the day because it is ponderable, because it is a fuel? We certainly have our own views on the problem. The Gas Industry is a vast chemical industry concerned in the production of solid, liquid, and gaseous fuels by the most thermally economical system known. That in itself is not sufficient. What we would urge is that this great chemical industry should regard itself also as a heat service industry. Gas will win the day through more perfect sales organization, increasingly efficient appliances, more attractive tariffs, better after-sales service, and fuller appreciation of the needs of the consumer. It will not win the day by sitting down on its bulk and patting its ponderous back.

Food for Passion

A second definition of the word "fuel" given by the Oxford English Dictionary is "something that feeds or inflames passion, &c." Certainly discussion on the relative merits of different fuels—and we are afraid, at the risk of Colonel Carr's disapproval, that we include electricity here in this category—is not always free from acrimony. Again, the steady progress of the Gas Industry is not infrequently the cause of impassioned outbursts in our electrical contemporaries. An example of the effect of "fuel" was provided by the National Coal Convention organized by the Coal Utilisation Council and which was the subject of comment in our issue for Nov. 27 last. As we mentioned, at the opening session the gas fire was most vigorously attacked, and the out-and-out condemnation met with a reception wholeheartedly enthusiastic. This attack, we suggested, seemed not a little out of place seeing that the Coal Utilisation Council professes friendship with the Gas Industry, which provides quite a useful proportion of the Council's funds. We were not at all surprised to find that Mr. W. R. Gordon, Director of the Council, took exception to our comments. His letter in defence of the C.U.C. appeared in our correspondence columns last week. He explained that, "unlike some other industries, the C.U.C. welcomes the expression of divergent views from its platform." The idea, we take it, is to collect money from an Industry which is one of the coal industry's best customers and then provide a platform for attack on that Industry's service to the public. Frankly we find this unusual policy difficult to understand.

Automatic Ignition

We have expressed the hope that when we turn on the gas fire we do not then have to apply a lighted match or taper to the gas flowing to the radiants. The self-igniting device may by some be regarded as a desirable attachment; for our part we should prefer a general attitude throughout the Industry that a fire without self-lighting equipment is incomplete. In other words that self-lighting is a necessity. One of the main arguments in favour of gaseous heating is its convenience. A gas fire is not 100% convenient without automatic ignition, and we maintain that we can afford to give nothing away to our electrical rivals. And our feeling in regard to the gas fire extends to gas appliances generally. There ought to be a big drive towards automatic ignition. For the cooker, we have, of course, various forms of gas lighting devices—matches, pistols, and so on—which are exceedingly convenient; but surely oven burners ought to incorporate self-ignition. As for lighting, switch operation deserves far more active sales pushing than it gets. In this case automatic operation assumes perhaps greater importance than in any other form of gas usage. Self-ignition should, in fact, be regarded as standard rather than as, at present, a pleasant but not an essential re-

finement. The manufacturers of appliances and equipment have expended much thought and energy on the development of reliable automatic lighting devices, and the Industry should show their appreciation of the work by wholehearted support. We realize that many undertakings are extensively advertising automatic ignition, employing most telling propaganda. Generally speaking, however, it cannot be said that we are making the most of what is undoubtedly a first-class selling point, adding further weight to the arguments in favour of using gas.

Incentive to Use Gas

We welcome the announcement of the Hartlepool Gas and Water Company that on Jan. 1 next a method alternative to the flat rate of charging for gas in the Company's area will come into force. This is a good start for the New Year, and we hope, for the prosperity of gas in 1936, that very many other undertakings will adopt a similar policy. In a well arranged pamphlet with striking cover the Company sets out clearly just what the new plan offers consumers. The basic idea is, of course, that, under the new tariff, consumers can enjoy all the advantages of gas for heating, water heating, and cooking at a cost which will not exceed their present total fuel. The Hartlepool optional two-part tariff, particulars of which are given in our news pages to-day, has the merit of simplicity. With a prepaid service charge of 10s. a quarter the ordinary consumer is offered gas at a net price of approximately 3½d. a therm. Alternatively, if he pays a service charge of 7s. 6d. a quarter, then he can have his gas at 4¾d. a therm. We are glad to note that the tariff, with appropriate modifications in the price of the therm, is extended to prepayment consumers. Under the new tariff a consumer of over 5,000 cu.ft. per quarter receives immediate benefit. In addition to this tariff there has been introduced an optional two-part block tariff for consumers other than domestic. This embodies a maximum demand charge and, according to quantity, gas at 3¾d. down to 2¼d. a therm, with a discount of 5%. Gas used for central heating is charged at a flat rate of 3¾d. per therm, less a similar discount.

The Hartlepool Company has provided real incentive to all their consumers—large and small, ordinary and prepayment—to use more gas and benefit accordingly.

Missing an Opportunity

This is the time of year when, more than at any other, eyes are drawn towards shop windows; for has not everyone the urge to "buy something?" And is not the problem of "What shall it be?" in every mind—even during the half day in the week on which the shops are closed? Yet on that particular afternoon of leisure—essential enough to the hard-worked staffs, goodness knows!—suggestion to the passer-by is reduced to exceedingly small proportions It is a time during which the deliberate shopper, no doubt, remains at home, but nevertheless many people have, or desire, to be abroad, and all of them at most seasons, and certainly on the near approach of Christmas, must be potential buyers.

Do the shops make the best of such opportunities as may offer themselves on these occasions? The question presented itself during a walk a week or two ago, in the late afternoon, through the main streets of a town near London which is famed as a shopping centre, and it admitted of but one answer—"No." The days are over short at this time of year, so that darkness was settling down, and the streets had a dreary and uninviting aspect. This, maybe, the shopkeepers would say is not their business, but what undoubtedly *is* their business is the fact that facing such shop windows as were lighted from within, so as to display the contents, were clustered knots of people clearly eagerly seeking inspiration. These "enlightened" shops, alas, were few and far between. For the most part the windows were in darkness, and there was little indeed about the streets that was calculated to invoke the Christmas spirit.

That there should be this absence of inspiration even upon a single week-day afternoon seems to spell the loss of an opportunity, not only at this season, but throughout the winter months. Shop-window illumination after closing hour need not be extravagant, either in design or in money, and concealed gas lighting units can be had which are simple and perfectly suited to the purpose, as well as being both low in first cost and inexpensive in operation. Illumination of this character should be regarded as part of a general policy. If shopkeepers do not wish to hide their goods under a bushel, neither should they adopt this process with their lights, even on early closing days. There is an idea here which might be put forward by gas undertakings in quarters where there is likelihood of its favourable reception. It will, of course, be recognized that the need for lighting of this sort varies according to the nature of the business that is carried on in the shop.

Profit or Loss?

Speaking of simplicity in connection with gas, brings to mind the complications that are occasionally met with in the case of electricity. The confusion of tariffs is always with us, and here much of the trouble is due to lack of simplicity and to multiplicity, which things open the door to misunderstanding. Judging by a matter which has just come to notice, these doubts and uncertainties outside the industry with regard to pricing would seem to have spread to other financial questions within it.

We learn, quoting from a local paper, that a "misleading suggestion" has been made recently by the Chief Engineer of the London and Home Counties Joint Electricity Authority, with reference to the financial working of the Council-owned electricity undertaking at Walton-on-Thames. The suggestion—"that there had been a loss instead of a profit shown in the Walton undertaking's accounts"—was emphatically contradicted in the Walton and Weybridge Council by the Chairman of the Electricity Committee, who carried the war into the enemy's camp by retorting that the accounts of the Joint Electricity Authority really were difficult to elucidate, though he did not think anyone would dispute, after wading through a maze of figures, that there was an outstanding deficit of substantial amount.

This is all very well, but when Chief Engineers and Committee Chairmen disagree, who may decide? It has always appeared to us that the simplest methods are the best as applied to pricing, and these divergent views upon profit or loss point emphatically to the benefits of equal simplicity in the setting out of accounts, in order that ratepayers and consumers may be free of doubt.

Correspondence

Have We Plant for All Emergencies?

Sir,—In the current number of the *Co-Partnership Journal* of the South Metropolitan Gas Company is a remarkable photograph of the frozen Thames in February, 1895, which shows great blocks of ice piled against the wharves below the Tower Bridge.

A long succession of mild winters may have caused some of us to persuade ourselves that we have sufficient gas-making plant for all emergencies—have we?

It is to be hoped that every Gas Manager will have a happy Christmas!

Yours, &c.,
"Well-Wisher."

Dec. 10, 1935.

Personal

The Council of the Association of Public Lighting Engineers have received the resignation of Mr. J. S. Dow as Hon. Secretary of the Association, as from Dec. 31 next, which they have accepted, and have appointed Mr. H. O. DAVIES, of 13, Victoria Street, to fill the vacancy. Mr. Davies will take up his new duties on Jan. 1.

* * *

Mr. C. B. CHAPMAN, B.Sc., Deputy Engineer to the Nelson Gas Department, was successful in the recent examination for Associate Membership of the Institution of Mechanical Engineers.

* * *

The Stirling Gas-Light Company announced on Dec. 6 that they had appointed Mr. ARTHUR CUTHBERT, at present Manager of Grangemouth Gas-Works, to the position of Manager of their Works at Stirling. Mr. Cuthbert started as an engineer in Glasgow and served in the Gas Department of the Corporation. Before going to Grangemouth he was Assistant Manager of the Dumfries Gas Company.

* * *

We learn, as we go to press, that Mr. A. W. SUMNER, for reasons of ill-health, has resigned from the position of Engineer and Manager to the Ipswich Gas Light Company. Our sympathies are extended to him. Mr. G. A. MALLETT has been appointed Secretary and Manager, and Mr. C. E. WRIGHT Chief Engineer. Both Mr. Mallett and Mr. Wright have been associated with the Company for many years.

* * *

Mr. W. J. A. GRAY, recently appointed an Assistant on the Staff of the Borough Engineer of South Shields, has been elected an Associate Member of the Institution of Civil Engineers. Mr. Gray served his pupilage with the Borough and Water Engineer at Wigan, being afterwards retained on the Engineering Staff there until leaving for South Shields. He is the son of Mr. J. A. Gray, Engineer and Manager to the Ashton-in-Makerfield Urban District Council.

Obituary

The death has occurred in a Dundee nursing home of ex-Bailie GEORGE PATTON, of Alyth, Chairman of the Alyth Gas Light Company.

* * *

The death took place on Dec. 6 of Mr. JOHN ADAM, ex-Provost of Laurencekirk, for many years Chairman of Laurencekirk Gas Lighting Society, Ltd.

* * *

The death occurred last Wednesday of Mrs. JESSIE A. BENNETT, the mother of Mr. W. H. BENNETT, Managing Director, East Surrey Gas Company, and Mr. C. VALON BENNETT, Immediate Past-President of The Institution of Gas Engineers.

* * *

Sir GEORGE HENRY SYMONS, outside representative of the Rotherham and District Collieries Association, died at the wheel of his car on Dec. 6 last. He had been for many years associated with the Rother Vale Collieries branch of the United Steel Companies, and on the formation of the Rotherham and District Collieries Association in 1926 he joined the Association.

News in Brief

Applications are Invited for the position of Engineer and Manager for their Gas Undertaking at a commencing salary of £300 by the Rawmarsh Urban District Council.

Application for a Special Order under the Gas Undertakings Acts, 1920 to 1934, is intended to be made to the Board of Trade by the Salisbury Gas Company with the object of varying the time now prescribed for the holding of the ordinary general meeting.

Christmas Fare is the theme of a series of lectures and demonstrations during the first three weeks of December arranged by the Alliance and Dublin Consumers' Gas Company. The lecturer on this occasion is Miss R. Thring, of the Radiation Research Kitchen and large attendances are being attracted to the Company's new Theatre.

Public Lighting is 100% Gas at Castleford, and the expenditure on maintenance for the past year was £2,883. There are 622 gas lamps in the 13·6 miles of road lighted. The average consumption of gas for public lighting per annum amounts to 12,705,000 cu.ft. charged at 2s. 9d. per 1,000 cu.ft. The public lighting rate is 8·100d. in the £.

A Substantial Increase in the sales of gas was reported at a meeting of Inverbervie Town Council on Dec. 9. Bailie Milne, Convener of the Gas Committee, referred to the fact that 117,300 more cubic feet of gas had been consumed this year. Bailie Milne also referred to the assistance given to them by Mr. Scobie, Gas Manager of Stonehaven, while their own Manager was ill.

The Second Lecture of the Season to the Outdoor Staff of the Sheffield Gas Company was given recently at the chief showrooms by Dr. Winter (Radiation Ltd.), who gave an Address on "Gas Fires." Over 50 persons attended and followed with the greatest interest the splendid expositions of Dr. Winter in describing the development of the gas fire. A good discussion ensued at the conclusion of the Address.

An Exhibition of Gas Appliances organized by the Gas Department of Darlington Corporation was opened in the Bath Hall by the Mayor (Councillor T. E. Hudson), who said the object was to show the public of the town the many ways in which gas could be utilized with economy and comfort in the home. Mr. A. E. Ruffhead, Gas Engineer, said that the price of gas during the current quarter was the lowest it had been since the war, being less than 1¼d. above the pre-war price or 5% increase, while wages were about 90% higher and coal over 50% higher. It was intended to introduce a new scale of charges for next year, with, it was hoped, an even more improved scale when the purchase of coke oven gas was complete. Alderman Seaton Leng, Chairman of the Gas and Electricity Committee, also addressed the gathering at the opening.

The Offer made by the Caledonian Gas Corporation for the purchase of their Gas Undertaking was rejected by the Newmilns Town Council last week, after a discussion in private, by five votes to four.

The Time of the opening meeting of the Photometry Section of the Illuminating Engineering Society is, we are informed by the Secretary, Mr. J. S. Dow, 6.30 p.m. and not 1.30 p.m. as was previously announced as the result of a typographical error.

Considerable Confusion was caused by an electrical failure at Cleveleys, Lancashire, on Friday of last week. At the busiest hour, when the shops were thronged with people making their Christmas purchases, the current which comes from the grid at Preston suddenly ceased. Trams, public lighting, and cinema performances were affected, apart from a reported loss by local tradesmen of hundreds of pounds.

Great Interest was shown by Leamington housewives in the recent cookery demonstrations and cake-baking competition held at the Salisbury Hall last week by the Leamington Priors Gas Company. The demonstrations which were opened by the Mayoress, Mrs. C. H. Southorn, included the showing of two of the B.C.G.A. publicity films, "The Romance of a Lump of Coal" and "The Dinner Hour." The demonstrator was Miss M. Harris, N.S.T.C., M.C.A.

That Domestic Consumers of gas should be considered before industrial consumers in any rate adjustment was the view of some of the members of the Oldbury Town Council last week. They were defeated, however, in moving back to the Gas Committee a recommendation that where the consumption of gas was ten million cu.ft. or more per quarter the charge should be at the net rate of 1s. 9d. per 1,000 cu.ft. It was pointed out that industrial consumers used 40% of the gas produced.

A Reduction in the Price of Gas is announced by the Newport (Mon.) Gas Company. For the first 6,000 cu.ft. consumed through ordinary meters per quarter 1s. 1d. will be charged per therm; for the next 94,000 cu.ft. 11d. per therm; for the next 100,000 cu.ft. 10d. per therm; for the next 100,000 cu.ft. 9d. per therm; and all over 300,000 cu.ft. at 8d. per therm. For the first 6,000 cu.ft. consumed through prepayment meters (including meter rents, &c.) per quarter 1s. 4½d. per therm is charged (adjusted by a rebate of 2·67d. per 1,000 cu.ft.), while any consumption in excess of 6,000 cu.ft. per quarter will be paid for at the rate of 1s. 1d. per therm (adjusted by a rebate of 1s. 6·42d. per 1,000 cu.ft.). The Company are also making extensive reductions in the price of appliances.

National Gas Council

Central Executive Board Meeting

A meeting of the Central Executive Board of the National Gas Council was held at 28, Grosvenor Gardens, S.W. 1, on Tuesday, Dec. 10—Sir DAVID MILNE-WATSON, LL.D., D.L., in the Chair.

British Gas Federation.

(a) *Nominations to the Joint Gas Conference Committee in connection with the British Industries Fair, Castle Bromwich, to be held on Feb. 25-26, 1936.*—It was reported that the following representatives had been elected to serve on the Joint Gas Conference Committee:

INSTITUTION OF GAS ENGINEERS.
Col. W. M. Carr — Mr. W. E. Price
Mr. S. Lacey

NATIONAL GAS COUNCIL.
Mr. P. N. Langford — Mr. W. W. Townsend
Mr. H. C. Smith

BRITISH COMMERCIAL GAS ASSOCIATION.
Sir Francis Goodenough — Mr. A. W. Smith
Mr. W. J. Sandeman

SOCIETY OF BRITISH GAS INDUSTRIES.
Mr. T. Allen — Mr. R. J. Rogers
Mr. D. M. Henshaw

GAS COMPANIES' PROTECTION ASSOCIATION.
Dr. Chas. Carpenter — Mr. F. J. Bradfield
Mr. R. W. Edwards

(b) *Annual Dinner.*—Arrangements in connection with the Second Annual Dinner were reported. (Reference to this event is made at length on other pages of this issue.)

Conjoint Conference of Public Utility Associations.

It was reported that the Annual Meeting of the Conjoint Conference would take place on Jan. 29, 1936, at 3 p.m.

Representatives to serve on the Council of the Conjoint Conference on behalf of the National Gas Council.—The following representatives were elected: Mr. R. Halkett, Ald. Sir Wm. Kay, Mr. Stephen Lacey, Mr. H. C. Smith, Mr. A. W. Smith, and Mr. W. J. Smith (Bolton).

Representatives to attend the Annual General Meeting of the Conference on Jan. 29, 1936.—It was suggested that the six gas representatives on the Council should be nominated to attend the Annual General Meeting, and it was left to the officers to obtain four additional representatives to complete the representation of the gas interests.

Federation of British Industries.

(a) *Grand Council, Main Group 9, Section 1 (Chemical Fertilizers and Explosives).*—The following representatives were re-elected: Mr. Chas. F. Botley and Mr. T. Hardie.

(b) *Grand Council, Main Group 14, Sub-Group 3 (Public Utilities).*—The following representatives will serve on this Group: Sir Francis Goodenough, Mr. H. C. Smith, and Col. S. S. Ogilvie.

Manchester and District Juniors Inspect Mersey Tunnel

There was a large gathering of members of the Manchester and District Junior Gas Association at their meeting on Dec. 4, when an inspection was made of the new Mersey Tunnel Works.

Although the various ventilating stations can be operated separately, this course is adopted only in cases of emergency, the whole of the tunnel being controlled from the control room. Here the party were shown the various devices for testing the carbon monoxide content of the air in the tunnel, safety appliances for fire, &c.

The members were then conveyed through the tunnel to the works of the Vacuum Oil Company, Ltd., at Birkenhead. It was learned that the Company has secured the contract for supplying 23,000 gallons of lubricating oil for the main turbines and auxiliary machinery for the new liner "Queen Mary."

Tea was served in the canteen at the invitation of the Directors of the Company. A joint vote of thanks was proposed by Mr. James Carr (Stretford) and Mr. D. Benson (Bolton) to the Vacuum Oil Company.

Mr. A. J. Walker, of the Vacuum Oil Company, then gave a Paper on "Gas-Works Lubrication," which will be published in a subsequent issue of the "JOURNAL."

Amalgamation and Grouping

A New Gas Corporation Registered.

The South Wales Gas Corporation, Ltd., has been registered as a public company with a nominal capital of £500 in £1 shares. The objects are to acquire undertakings in South Wales formed to carry on any public utility, especially those concerned with the manufacture, generation, and supply of gas, water, electricity, &c. The Secretary of the Corporation is Mr. A. G. T. Oakley, 52, Queen Victoria Street, E.C. 2.

Associated Gas and Water and East Surrey.

The Directors of Associated Gas & Water Undertakings, Ltd., announce that the Company has acquired the controlling interest in the East Surrey Gas Company. The East Surrey Gas Company, whose statutory area of supply covers approximately 120 square miles in the county of Surrey, is an amalgamation of the Redhill Gas Company, the Reigate Gas Company, Ltd., the Godstone District Gas Company, Ltd., and the Dorking Gas Company.

Forthcoming Engagements

Dec.

19.—I.G.E.—Refractory Materials Joint Committee, 2.30 p.m.
21.—SCOTTISH WESTERN JUNIOR ASSOCIATION.—Annual Social.

1936.

Jan.

7.—I.G.E.—Research Executive Committee, 2.30 p.m.
11.—SCOTTISH JUNIOR ASSOCIATION.—Joint Meeting in Glasgow. Address by Mr. H. C. Smith.
13.—I.G.E.—Finance Committee, 1.45 p.m.; Membership Committee, 1.45 p.m.; General Purposes Committee, 3.15 p.m.
14.—I.G.E.—Council Meeting, 10 a.m.; Gas Education Committee, 4 p.m.
15.—I.G.E.—Education Executive Committee, 10 a.m.
16.—MIDLAND JUNIOR ASSOCIATION.—Meeting. Paper by Mr. B. Green.
18.—WESTERN JUNIOR ASSOCIATION.—Meeting at Bath. Paper by Mr. F. G. O'Neill.
18.—YORKSHIRE JUNIOR ASSOCIATION.—Meeting at Oldham. Paper by Mr. R. E. Stott.
24.—LONDON AND SOUTHERN JUNIOR ASSOCIATION.—Meeting. Paper by Mr. T. A. Wolfe.
25.—WALES AND MONMOUTHSHIRE JUNIOR ASSOCIATION.—Meeting. Paper by Mr. C. F. Petersen.
31.—I.G.E.—Liquor Effluents and Ammonia Committee, 11.15 a.m.; Joint Research Committee, 2.30 p.m.

Feb.

6.—MIDLAND JUNIOR ASSOCIATION.—Meeting. Paper by Mr. G. C. Pearson.
8.—MANCHESTER AND DISTRICT JUNIOR ASSOCIATION.—Meeting at Darwen. Paper by Mr. J. A. Derbyshire.
8.—SCOTTISH WESTERN JUNIOR ASSOCIATION.—Meeting.
14.—LONDON AND SOUTHERN JUNIOR ASSOCIATION.—Meeting. Paper by Dr. F. J. Dent.
15.—SCOTTISH WESTERN JUNIOR ASSOCIATION.—Annual Social.
15.—SCOTTISH EASTERN JUNIOR ASSOCIATION.—Meeting at Perth.
15.—YORKSHIRE JUNIOR ASSOCIATION.—Short Paper Meeting at Bradford.
20.—JOINT JUNIOR ASSOCIATIONS.—Visit to B.I.F., Birmingham.
22.—SCOTTISH WESTERN JUNIOR ASSOCIATION.—Meeting at Kingshill Colliery.
22.—WESTERN JUNIOR ASSOCIATION.—Meeting at Yeovil. Paper by Mr. T. W. Clapham.

Mar.

4.—MANCHESTER AND YORKSHIRE JOINT JUNIOR ASSOCIATIONS.—Visit to Leyland. Paper by Mr. R. L. Greaves.
5.—MIDLAND JUNIOR ASSOCIATION.—Meeting. Lecture on Refrigeration.
7.—SCOTTISH JUNIOR ASSOCIATION.—Joint Meeting in Edinburgh. Paper by Mr. H. Kerr.

The Institution of Gas Engineers

Copies of the recently issued British Standard Specification for the Dimensions of Small Rivets (Ferrous and Non-Ferrous, of Nominal Diameters Below ½ in.) for General Purposes (No. 641-1935) may be obtained, price 2s. each, from the Secretary, The Institution of Gas Engineers, 28, Grosvenor Gardens, London, S.W. 1.

Members of The Institution of Gas Engineers are invited by the Physical Society to attend the 26th Annual Exhibition of Scientific Instruments and Apparatus, at the Imperial College of Science and Technology, Imperial Institute Road, South Kensington, London, S.W. 7, on Tuesday, Jan. 7, 1936 (3 p.m. to 6 p.m. and 7 p.m. to 10 p.m.), Wednesday, Jan. 8 (4 p.m. to 6 p.m. and 7 p.m. to 10 p.m.), and Thursday, Jan. 9 (3 p.m. to 6 p.m. and 7 p.m. to 10 p.m.). Admission tickets may be obtained from the Secretary of The Institution of Gas Engineers.

Women's Gas Council

Formation of a Branch at Bradford.

Bradford ladies formed a local branch of the Women's Gas Council at a meeting held on Dec. 12 at the Bradford Gas Department Offices, Britannia House. Mr. G. E. Currier, Engineer and Manager of the Gas Department, presided, and the objects of the movement were outlined by Miss Kathleen M. Haplin, Organizing Secretary of the Council. Mrs. Chambers, wife of the Chairman of the Halifax Health Committee, and Mrs. W. B. McLusky, wife of the Halifax Gas Engineer and Manager, came from the pioneer branch at Halifax to support the branch in the neighbouring city. The Lady Mayoress of Bradford (Mrs. J. Pearson) was appointed President, with Miss Ella Hodgson (ex-Lady Mayoress) as Executive Chairman; Miss N. Hart as Hon. Secretary, and the following Committee: Mrs. F. J. Cowie (wife of the Chairman of the Bradford Gas Committee), Mrs. D. Helliwell (wife of a Member of the Gas Committee), Councillor Mrs. H. A. Grundy, Mrs. A. Ward, Miss L. E. Brace, Mrs. H. J. Cunningham, Mrs. N. Cawthron, Mrs. G. Smithies, Mrs. A. Riddell, and Mrs. Foster Sunderland.

Brighton.

Miss Halpin will address the Inaugural Meeting at the Brighton Branch of the W.G.C. on Tuesday, Jan. 7, 1936.

Westminster Technical Institute

Annual Prize Distribution

By kind permission of the Gas Light and Coke Company the annual prize distribution of the Westminster Technical Institute took place at the Horseferry Hall on Monday last.

The chair was taken by Sir Francis Goodenough, C.B.E. The Principal, Mr. J. N. Long, D.Sc., M.I.Mech.E., in the course of his remarks, pointed out that last year was a record one in the history of the Institute, there being 2,216 students in all their departments. The average number of hours worked per student was in the region of 119. Another interesting fact revealed by Dr. Long was that in addition to using great quantities of coke for heating the Institute over four million cubic feet of gas was consumed annually. With regard to successes in gas subjects, they secured 179 in the City and Guilds Examinations for Gas Fitting and Supply. In The Institution of Gas Engineers' Examinations they obtained 60 successes out of a total for the country of 98. In the Higher Grade Examinations they secured 30 successes out of 53 for the whole country.

Dr. Long concluded his remarks by thanking the officers of the Gas Light and Coke Company for their kind hospitality.

The Chairman then called upon Mr. Percy Lovell, F.S.A., the Organizing Secretary of the London Society, to give his lantern lecture on "Whitehall." With the aid of some very interesting slides, the lecturer indicated the various stages in the evolution of modern Whitehall from the days of Henry VIII. A hearty vote of thanks to Mr. Lovell was ably proposed by Mr. Stephen Lacey, B.Sc., M.Inst.C.E., of the Gas Light and Coke Company.

The prizes were then distributed by Mr. R. W. Foot, O.B.E., M.C., General Manager of the Gas Light and Coke Company, who subsequently congratulated the students upon their excellent work during the past year. The results were all the more praiseworthy because in very many cases they were obtained by students who attended night classes after a hard day's work. The Chairman then proposed a vote of thanks to Mr. Foot, and the proceedings terminated with light refreshments.

Hartlepool Gas and Water Company

Optional Two-Part Tariff

An alternative method of charging for gas in the Hartlepool Gas and Water Company's area will come into force on Jan. 1, 1936.

Optional Domestic Two-Part Tariff.

At the consumers' option,
Either,

(*a*) A quarterly service rental of 10s. payable in advance, and all gas consumed charged at the rate of 3¾d. per therm, less a discount of 5% on gas only, for payment in full within 21 days; making the net price for gas approximately 3½d. per therm, or 1s. 6d. per 1,000 cu.ft.
Or,

(*b*) A quarterly service rental of 7s. 6d. payable in advance, and all gas consumed charged at the rate of 5d. per therm, less a discount of 5% on gas only, for payment within 21 days, making the net price for gas 4¾d. per therm, or approximately 2s. per 1,000 cu.ft.

The above optional tariff will apply also in the case of a combined house and shop provided that the maximum 24 hours' consumption in any consecutive 12 months does not exceed 4 therms (approximately 800 cu.ft.). If the maximum 24 hours' consumption exceeds 4 therms, the Two-Part Block Tariff for consumers other than domestic will apply.

Optional Prepayment Two-Part Tariff.

At the consumers' option,
Either,

(*a*) A quarterly service rental of 10s. payable in advance (5s. each regular collection of which there are eight per annum) and gas consumed at a net price of 5½d. per therm, or approximately 2s. 4d. per 1,000 cu.ft. (36 cu.ft. for 1d.). Meters will remain set as at present, 18 cu.ft. for 1d. (or approximately 4s. 7½d. per 1,000 cu.ft.); the difference of 2s. 3½d. per 1,000 cu.ft. will be returned to the consumer as rebate on collection.
Or,

(*b*) A quarterly service rental of 7s. 6d. payable in advance (3s. 9d. each regular collection of which there are 8 per annum), and gas consumed at a net price of 6¾d. per therm, or approximately 2s. 10½d. per 1,000 cu.ft. (29 cu.ft. for 1d.). Meters will remain set as at present, 18 cu.ft. for 1d. (or approximately 4s. 7½d. per 1,000 cu.ft.); the difference of 1s. 9d. per 1,000 cu.ft. will be returned to the consumer as rebate on collection.

The above optional tariffs will apply also in the case of a combined house and shop provided that the maximum 24 hours' consumption in any consecutive 12 months does not exceed 4 therms (approximately 800 cu.ft.). If the maximum 24 hours' consumption exceeds 4 therms the above terms for gas used will apply, but the service rental charge will be based on maximum demand as in the case of the Two-Part Block Tariff for consumers other than domestic.

Optional Two-Part Block Tariff.

The charge shall be as follows for each and every service pipe laid into the premises:

(*a*) A maximum demand charge of 10s. per therm (£2 11s. per 1,000 cu.ft.) per annum, payable quarterly, for every therm required or estimated to be required in any consecutive 24 hours. This charge shall apply for the first 500 therms of maximum daily demand and the maximum charge for all therms required in excess of this quantity shall be at the rate of 5s. per therm (£1 5s. 6d. per 1,000 cu.ft.) per annum. Minimum charge 10s. per quarter.

(*b*) A charge for gas consumed on the following scale:

	Per Therm.	Per 1,000 Cu.Ft.
For the first 1,000,000 cu.ft. per quarter .	3¾d.	= 1s. 7·12d.
,, next 1,000,000 ,, ,, . .	3¼d.	= 1s. 4·57d.
,, ,, 3,000,000 ,, ,, . .	2¾d.	= 1s. 2·02d.
All in excess of ,, ,, ,, . .	2¼d.	= 0s. 11·475d.

(*c*) Meter rent according to capacity.

(*d*) Less a discount of 5% on the gas only, allowed for payment within 21 days.

Charges for Gas for Central Heating.

All gas used for heating in connection with hot water circulating systems will be charged at a flat rate of 3¾d. per therm, less a discount of 5% for payment within 21 days; making the net price approximately 1s. 6d. per 1,000 cu.ft.

Meter rents are charged according to capacity.

Further Competition Window Displays

These two attractive window displays were entered for the *Daily Express* Window Competition by the Tunbridge Wells Gas Company. The gas fire display extolled the virtues of "Mr. Therm," who in the winter "brings us summer warmth again." The sun rising from behind Richmonds' "Castile" fire on the left was brought out in warm, glowing colours to contrast with the approaching winter in the background. The two other fires shown in this display were Richmonds' "Cloister" and "Reflector." The gas cooker display had a particular local significance, as High Rocks are one of the features of Tunbridge Wells and known to every resident and visitor to the town. These rocks have stood firm through the ages; and advantage was taken of this fact to point out that they "still stand as firm to-day as gas for cooking." The cooker selected to complete this display was one of Richmonds' "Bungalow" "New World" series in "Beau" blue enamel finish, which stood out in bright relief against the grey sandstone rocks which formed the background. Ample evidence of the excellence of gas for window lighting was a feature of the display, and in the case of the gas fire window the use of Falk, Stadelmann's "Fire Glow" mantles were "blended" with the ordinary mantles to give a pleasing effect.

Coke Oven Managers' Association

Officials for the Ensuing Year

We are informed by the Coke Oven Managers' Association that the Officials are now as follows:

President.—T. Westthorp, A.M.I.Chem.E., "Wallnook," Langley Park, Consett.
Vice-President.—T. Johnson, B.Sc., 8, Cyncoed Road, Cardiff.
Hon. Secretary.—F. White, "Lynmere," Greasborough, nr. Rotherham.
Hon. Treasurer.—Philip B. Nicholson, J.P., Wath-upon-Dearne, nr. Rotherham.

The Illuminating Engineering Society

Formation of Library and Photometry Section

The formation of a Library of books dealing with every aspect of illumination, photometry, and kindred subjects is now being undertaken by the Illuminating Engineering Society. Certain books on these subjects are available at the chief scientific and technical libraries, but there is at present no place where all such literature is assembled together for ready reference. Arrangements for housing the collection are not yet complete, but a library fund has already been started and offers of contributions of books are being received. The Society's Hon. Secretary, Mr. J. S. Dow, 32, Victoria Street, S.W. 1, would be grateful to hear from any members or others who would be willing to contribute appropriate books of scientific or historical interest.

A special section of the Society to be devoted to photometry and allied subjects is now being formed. The Organizing Committee consists of: Mr. H. Buckley, Chairman, Mr. M. C. Bennett, Mr. F. C. Smith, Mr. E. Stroud, Dr. J. W. T. Walsh, and Mr. C. T. Winch, with Mr. K. F. Sawyer (Gas Light and Coke Company, Watson House, Nine Elms Lane, London, S.W. 8) as Hon. Secretary. Arrangements have now been made for the Opening Meeting to take place at the Westminster Technical Institute, Vincent Square, S.W. 1, at 6.30 p.m. on Jan. 28. An introductory address, dealing with certain outstanding problems in photometry, will be delivered by Dr. J. W. T. Walsh, following the discussion of which, suggestions for future meetings and visits, &c., will be welcomed from those present.

As from Jan. 1, the title of the official organ of the Society will be changed from the *Illuminating Engineer* to *Light and Lighting*. From that date the Papers read before the Society, discussions thereon, and notes on the Society's activities, will appear in full in specially printed Transactions, issued approximately at monthly intervals during the Session. The Transactions, as well as the Journal, will be circulated free to Members of the Society of all classes. The Transactions will take the form of numbered issues, each devoted to a specific meeting, which will be inserted in the copies of the Journal.

Scottish Junior Gas Association (Western District)

Visit to Newton-on-Ayr

On Nov. 30 members of the Scottish Junior Gas Association (Western District) spent an interesting afternoon at the Works of the Newton-on-Ayr Gas Company.

Arriving at the Works they were welcomed by Mr. McLaren, Works Manager, and by Directors of the Company.

The Works plant was erected and started carbonizing in 1916. It consists of twelve Woodall-Duckham vertical retorts built of fireclay brick and adapted for steaming the charge to any desired amount. Within recent years four new retorts have been installed by the Woodall-Duckham Company. These are silica lined and of 6½ tons per day capacity.

The make in 1916 was 95 million cu.ft., to-day it is 210 million cu.ft., and is steadily increasing despite the fact that owing to the nature of the town the load is largely a domestic one.

The producers are situated between the retorts they serve (two retorts per producer) and are accessible from the half landing. Five bars consist of 1½-angle iron, down which water is allowed to trickle from a drip plate. Steam is also introduced under fire bars to soften clinker and preserve bars, &c.

There are four sets of condensers installed, and four purifiers, 20 ft. square by 6 ft. deep. There are two gasholders, the larger of which was built almost thirty years

ago and is column guided, and consists of two lifts, and throws a pressure of 5½ in. water column.

Following the tour of the Works, 'buses conveyed the party to the Orangefield Hotel, where tea and a musical programme completed a very enjoyable afternoon.

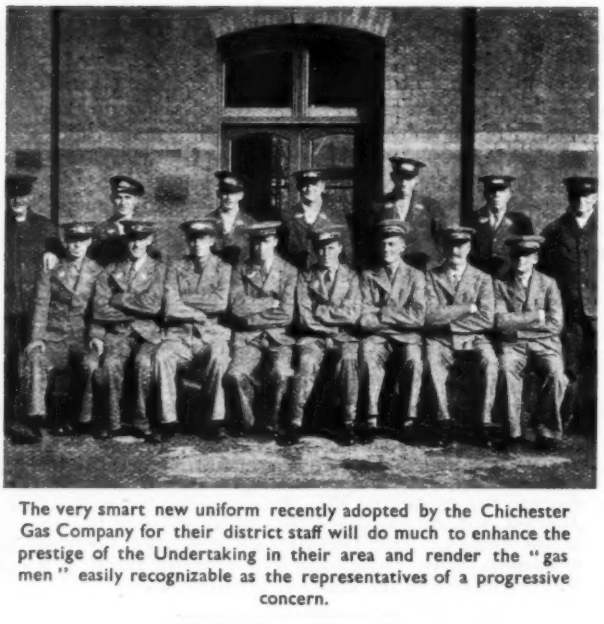
A hearty welcome was extended by the Chairman, Mr. Monnickendam, and the President (Mr. A. Bujnowski), replying, thanked him and his co-Directors, on behalf of the members, for the facilities afforded, and for a very enjoyable afternoon.

Gas Under Municipal Control

With their issue for Dec. 10, *The Times* published a special Local Government Centenary Number. To this Mr. John Terrace contributed a highly interesting article showing the progress made by the Gas Industry during the past century, with particular reference to the acquisition of gas undertakings by municipalities and their efficient management under this control.

Mr. Terrace mentioned the part played by municipalities, through their officers, in research and investigation into the best means of utilizing gas.

Uniforms for the "Gas Man"



The very smart new uniform recently adopted by the Chichester Gas Company for their district staff will do much to enhance the prestige of the Undertaking in their area and render the "gas men" easily recognizable as the representatives of a progressive concern.

Central Heating by Gas

Paper Before the Engineers-in-Charge

A Paper was read at a meeting of the Engineers-in-Charge by Mr. M. W. Jones, B.A., of the Gas Light and Coke Company, on Dec. 11, as a contribution to a symposium on central heating. The Chair was taken by Mr. W. E. Fretwell, M.I.H.V.E., M.R.S.I., M.I.E.C. The best comfort conditions in a building, it was pointed out, are obtained when local radiant heating is employed together with a central hot water radiator system, the latter operating to give a room temperature of about 55° F.

Mr. Jones then went on to deal with the advantages of gas for central heating by hot water radiators, and in that connection he observed that rather than install a large boiler a battery of smaller ones was preferable, since some of them might then be put out of commission for cleaning.

Since the gas-fired boiler was thermostatically-controlled it would be under its full load for only a very short part of its life; the question therefore arose as to how a reduction to by-pass rate affected the efficiency of the boiler. Those with a forced draught normally employed only a pilot so that once the thermostat had cut in the efficiency might be assumed to be constant, and the running costs negligible. On the other hand, the natural draught type might drop in heat transfer efficiency to 70%, and even to 60%, at by-pass rate, and the effect of this drop may be well worth taking into consideration.

For example, in a large installation where these considerations were of great importance, with a boiler working on an average 8 hours a day on full load, an increase in the by-pass efficiency from 50% to 70% reduced the effective cost per therm by 0·18d., or by £10 per annum for a yearly consumption of 10,000 therms (gas at 6d. per therm). For such cases automatic dampers have been designed which operate from the gas flow to the burners and close down when the gas flow decreases.

The Paper was concluded with reference to condensation, gas conversion sets, gas-fired central domestic hot water supply, and running costs.

The London and Southern District Juniors

Address by Mr. Walter Grogono

A meeting of the London and Southern District Junior Gas Association was held at the London School of Hygiene and Tropical Medicine on Friday, Nov. 29, at 7.30 p.m., when Mr. Walter Grogono, Engineer of the Croydon Gas Company, read a Paper on "The Reconstruction of Croydon Gas-Works." The Paper was accompanied by a large number of lantern slides.

The author showed by means of curves the rising gas consumption with which the Company was faced in 1927 and described the plant installed to cope with the increased demand over the last eight years.

The Paper was followed by a very lively discussion, and among the speakers were Mr. A. H. Solomon, Mr. W. J. Sandeman, and Mr. P. C. Gardiner. A vote of thanks to Mr. Grogono was proposed by Mr. Roy Summerson (Luton) and seconded by Mr. J. Grayston (Lea Bridge).

Up-to-Date Gas Equipment at Bromley's New Cafe

Messrs. W. E. Wilson's recently opened branch in High Street, Bromley (Kent), is a café on thoroughly up-to-date lines, and as such it is, perhaps, not unnatural that gas should be used to some extent. The installation becomes noteworthy, however, by reason of the fact that gas is utilized exclusively not only for all culinary requirements, but also for refrigeration, for water heating, and for heating generally throughout the building—the whole forming a very interesting example of modern practice.

Following upon past experience at their principal branch at Croydon (where they have evidently been well served by the Croydon Gas Company), the Management have adopted all the latest gas apparatus, and the installation work has been carried out neatly and effectively by the South Suburban Gas Company, to whom the Manager paid tribute for their care and attention to details.

In upholding their claim to be specialists in tea and coffee, Messrs. Wilson make it their chief aim to ensure consistency, and to this end they have found gas to be the ideal fuel. In the shop window a gas-heated coffee roaster is in operation, gas having been found long ago to be particularly suitable for this purpose by reason of its accuracy of control.

The café has two kitchens—one serving each floor—and in these the principal gas appliances are similar. There is a series of hotplates in grey mottled enamel finish for boiling the kettles for tea making. Boiling kettles for tea making in a modern café may, perhaps, sound a little odd in these days; but Messrs. Wilson's have found by long experience that this is the best way of producing absolutely consistent tea by their time infusion method, a measured quantity of tea being infused for a definite period, determined by a clockwork bell mechanism. An ingenious method is employed for coffee making; in this case the water is boiled in an upper container over a gas ring and percolated down through the coffee into a Sumerling gas-heated water-jacketted urn, which keeps it hot and always ready for immediate draw-off.

In each of the kitchens there is also a large Fletcher-Russell combined griller with commodious hotcloset below, the whole in pleasing enamel finish and suitably vented from a hood above to the outside atmosphere, thus preventing the kitchens becoming unduly warm. In the ground floor kitchen there is also a large gas-operated refrigerator, while all the hot water for washing up and general cleaning purposes is provided by two Potterton No. 2 "Emperor" boilers in mottled enamel finish, thermostatically controlled and coupled up in series to a large lagged storage tank. The impression given by the kitchens is one of an effective job carried out under conditions where there was no space to spare, and the neat gasfitting work, with the pipes painted aluminium to harmonize with the grey mottled enamel appliances, is particularly noteworthy.

As we have said, the whole of the heating of both ground floor and first floor cafés is also carried out by gas, and ap-

pliances have been chosen to fit in with the modern decoration. In a building of this nature the Management have taken a wise step in providing "luminous" gas heating appliances, the cheerful effect of which is very much more pleasing to the public than mere hot water radiators, while giving rise to none of the dust and dirt occasioned by a coal fire. On the ground floor a built-in "Portcullis" gas fire at one end of the room makes an attractive fitting, while the warm glow from the Cannon's "Beacon" radiators, in bronze finish, down each side of the room complete a very effective scheme. On the first floor the heating is also provided by "luminous" radiators, in this case being Wright's "Console" cabinet models in gilt finish, also very pleasing in appearance and efficient in operation.

The whole café forms a splendid example of up-to-date equipment, and the Management are to be congratulated upon their choice of fuel and the South Suburban Gas Company upon an excellent piece of fitting work. On the occasion of our inspection of the premises the Manager paid testimony to the reliability of gas and to the efficient manner in which it was carrying out the work it was called upon to do.

The British Gas Federation

First Annual Report

Presented at the First Annual General Meeting of the Federation held at Grosvenor House, Park Lane, W. 1, on Wednesday, Dec. 11, 1935.

1. The first year's work of an Organization so comprehensive in character and representing such a variety of interests as The British Gas Federation, has necessarily been largely concerned with the creation of machinery fitted to enable the Federation not only to perform those functions immediately required of it, but to develop in such a way as to ensure that it shall be truly representative of the Gas Industry as a whole, and able to assume the responsibilities which such a Body may be called upon to undertake.

2. Lord Macmillan presided at the Inaugural Dinner held on 5th November, 1934, which was largely attended and included many distinguished persons in all walks of life. He will preside at the Second Annual Dinner to be held on the 11th December, 1935, and will be succeeded as President by the Earl of Dudley.

3. The Gas Companies' Protection Association became one of the Constituent Bodies early in the year, so that all the National Gas Bodies are now included.

4. Four meetings of the Council have been held during the year, when many matters of interest to the Industry as a whole were discussed, the viewpoint of each Constituent Body obtained, and where required appropriate action taken.

5. For the purpose of maintaining the closest co-operation and of preventing overlapping of work amongst the Constituent Bodies, the Council set up a Panel of Officers of such Bodies. This Panel meets every month, considers all matters affecting the Industry as a whole, and reports accordingly to the Council. Appropriate representation was arranged at a number of National Conferences of direct importance to the Gas Industry.

6. (*a*) The Council has had under consideration the extended participation of the Industry, through The British Gas Federation, in National Exhibitions, and a Committee has been set up to ensure appropriate representation at all National Exhibitions at which Gas should be in evidence.

(*b*) An effective Exhibit was staged under the title of "British Gas Federation—Industrial Gas Exhibit" at the Shipbuilding, Engineering, and Machinery Exhibition held at Olympia in September, 1935. This Exhibit, which featured a number of the industrial uses of gas, drew special attention to the work of the Industrial Gas Development Centres throughout the country. Officials of these Centres were in attendance and dealt with a large number of enquiries. Special notices of the Exhibit appeared in the columns of many technical and trade Papers.

(*c*) The arrangements for, and organization of, the Gas Industries Section Exhibit at the British Industries Fair at Castle Bromwich in February, 1936, have been undertaken by the Federation through a special Gas Industries Section Committee.

(*d*) Arrangements have been made whereby the Federation will be represented, through the medium of a Gas Information Bureau, at the Hotel, Restaurant, and Catering Exhibition in November, 1935, and at the Ideal Home Exhibition in March, 1936.

(*e*) Gas Exhibitions will be arranged at important Agricultural Shows throughout the country.

7. The Council have had under consideration the type and condition of Gas consuming appliances in Universities, Schools, and Colleges, at which, in many instances, the Gas installations did not meet modern requirements. The Federation is taking steps to rectify this.

8. The movement to improve standards of Housing has received the active support of the Federation, and close contact is being maintained with the Building Industry to ensure that only modern and suitable Gas installations are installed in new houses.

9. Many other matters—referring both to the relations of the Constituent Bodies one to the other, to the future functions of the Federation, and to the relations of the Gas Industry with the Government, Local Authorities, and other Bodies—have been reviewed by the Council, and appropriate action taken or recommendations made.

10. The first members of the Council appointed under Rule VI. are as follows, viz.:—

Representing the National Gas Council:

Sir David Milne-Watson, LL.D., D.L.
Mr. A. W. Smith, F.C.I.S.
Mr. T. P. Ridley, F.C.I.S.
Mr. William Cash, F.C.A., J.P.
Mr. Charles S. Shapley, M.I.Mech.E.

Representing the British Commercial Gas Association:

Sir Francis Goodenough, C.B.E.
Mr. James Jamieson.
Councillor Walter Muter.
Mr. J. Sandon Stubbs, F.C.I.S.
Mr. W. N. Westlake.

Representing The Institution of Gas Engineers:

Mr. C. Valon Bennett, M.I.Mech.E.
Colonel W. Moncrieff Carr, O.B.E., T.D.
Mr. H. D. Madden, M.Inst.C.E.
Mr. H. C. Smith, M.Inst.C.E.
Mr. Frank P. Tarratt, M.Inst.C.E.

Representing the Society of British Gas Industries:

Mr. F. J. Gould.
Mr. D. M. Henshaw.
Dr. E. W. Smith, C.B.E., F.I.C.
Mr. H. M. Thornton, J.P., M.I.Mech.E.
Mr. Douglas W. Turner.

Representing the Gas Companies' Protection Association:

Mr. Charles F. Botley, M.Inst.C.E.
Mr. F. J. Bradfield, F.C.I.S.
Mr. F. G. Brewer.
Mr. R. W. Edwards, J.P.
Mr. Ralph Halkett.

D. Milne-Watson,
Chairman of Council.

28, Grosvenor Gardens,
London, S.W. 1.
9th October, 1935.

BRITISH GAS FEDERATION

SECOND . . . ANNUAL DINNER

December 11, 1935

LORD DUDLEY,
The New President.

THE Second Annual Dinner of the British Gas Federation was held at Grosvenor House, Park Lane, on Wednesday, Dec. 11 – when the Right Honourable Lord Macmillan, K.C., presided over a gathering of over eight hundred members and guests.

The incoming President (Lord Dudley) was unfortunately prevented, through indisposition, from presiding over this function as he would normally have done, and the retiring President therefore deputized for him.

Official guests included members of the Government, of both Houses of Parliament, government and local officials, together with the Presidents of kindred bodies, and many prominent in educational, scientific, and industrial spheres.

There had been a long-standing arrangement with Mr. Walter Runciman (President of the Board of Trade) that he should propose the principal Toast; but, unfortunately, owing to a chill, he had to cancel all his engagements. At the last moment Lord Kennet, G.B.E., D.S.O. (better known as Sir Hilton Young), who was Minister of Health in the last Government, had consented to take his place.

The Dinner proved an outstanding success, and the whole organization bore testimony to the ability of the Committee responsible, with Mr. J. R. W. Alexander as Secretary. All the constituent bodies of the Federation were well represented.

THE DINNER SPEECHES.

The Toast of "The King," proposed by the CHAIRMAN, was honoured.

The Rt. Hon. Lord Kennet, proposing "The British Gas Federation," said:

It falls to me to propose a toast which I know you will receive unanimously, the toast of the Federation that meets here to-night, and it is a particularly pleasing and charming occasion upon which I am privileged to propose this Toast, that of the first birthday of this great Federation. We congratulate them to-night upon a year's successful working. There should be one voice which speaks on behalf of all the great and common interests, and the Federation will do that as it passes from strength to strength. I should like to mention one figure which had been called to my attention; a signpost on the path of prosperity. It is the ten millionth customer of the Gas Industry.

When foreigners ask me to point out to them signs of the activity and vitality of our industries, I have had in the past to point out to them two things; first of all, the resurrection of the City of Sheffield and its foundation of a new steel trade upon, as it were, the bones of the old steel trade. The second thing I have been in the habit of pointing out is the marvellous self-adaptation to modern conditions and circumstances of the Gas Industry of this country. The two, as it were, join themselves together because I have learned that to-day the steel industries of Sheffield are the best customers of the Sheffield Gas Company. This marvellous resurrection, and the adaptability of the Gas Industry to modern conditions, are two of the greatest signs of vitality in our national organization. And the adaptation of the Gas Industry in this manner applies not only to its primary product, but also to its by-products. I can quote two instances of that. As one greatly interested in rural amenities, I recognize the manner in which the Gas Industry has assisted in getting over the horrible problem of dust upon the highways by the use of tar. Another of the great triumphs of the Gas Industry is the manner in which, by its aid, we have recaptured for ourselves our own dye trade.

For all these purposes the essential positive of industrial enterprise is scientific research, and if I might pause and strike a new note for a moment it is to congratulate the Gas Industry upon the development of the Industrial Centres under the influence of the great gas undertakings where the problems of the use of industrial gas are enquired into and determined in relation to the needs of the actual locality ["Hear, hear"], which is the essential for success in that regard. Your great Industry is seated, as it were, in the position of central control over the solution of one of our greatest national problems, the solution of the problem of the efficient use of our national asset, coal, and it is when we begin to realize the technique of gas and the use of gas that we appreciate how the efficient utilization of coal can be best promoted. One figure hangs in my mind, and it is that through the gas technique the efficiency of coal can be raised to 86% of the consumption. I know of no other method by which an equal efficiency can be produced.

I have been concerned during the past five years with many problems of public life, and I gratefully recognize the enormous benefit conferred by the development of methods for using fuel in a smokeless manner to avoid interference with the amenities and health, and before I conclude I should like to express just one word of thanks for all that the Gas Industry has done to make cheap housing possible for the people, that enormous effort for the clearing away of slums and the re-housing of the workers in decent conditions. We have indeed had yeoman service from your great Industry in the reduction of rents by cheap

warming and cheap lighting, and in that regard I would most earnestly impress upon local authorities the great obligation they owe to the Gas Industry for the magnificent effort that has been made to ensure the use of the most modern gas appliances and the most scientific use of gas apparatus and the important part this has played in the reduction of rents.

There is one other memory which hangs in my mind, and that is the close relationship which exists between the great public utility which is administered by the members of this Federation and the social government. The warm co-operation between the centre and the circumference is the secret of success in good administration, and I am confident, and believe, that the national welfare in this regard is furthered by warm and friendly co-operation between the Gas Industry as represented by your Federation, and the social government as represented by the Board of Trade.

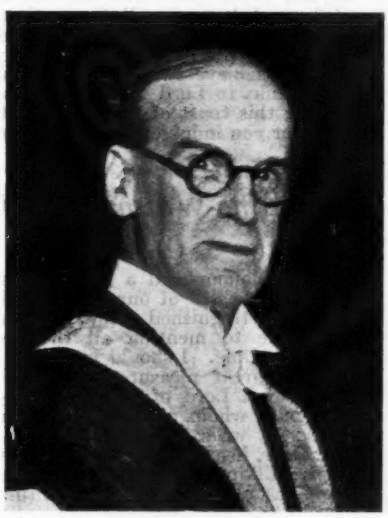
I am confident you will profoundly regret with me the temporary indisposition of the President of the Board of Trade, who would I know have been very pleased to have been present to-night, and I know you will feel with me sympathy in that indisposition and wish Mr. Runciman a prompt restoration to complete health for the sake of his high office.

Lord Macmillan, responding to the Toast, said:

I confess I rise to address you with considerable dubiety as to my precise legal status. I find myself described in the Toast List to-night as President of the British Gas Federation, but I understand that at 3 o'clock this afternoon my mantle—perhaps I should say my gas-mantle—descended upon other shoulders, and to-night you should have had the better fortune of having Lord Dudley as your Chairman. I am sure that with his high illuminating power he will add lustre to the Presidency of this great Federation, and you will all, I am sure, join in regretting that on account of the state of his health he has been forbidden to be your President and your Chairman to-night. No better choice could have been made for the office which I have had the privilege of holding for a year, and Lord Dudley has had previous experience, as you will know, in connection with the Gas Industry. He was President of the Society of British Gas Industries about ten years ago, during 1926-27. I am sure you will wish to send Lord Dudley to-night a message of congratulation and also of sympathy. ["Hear, hear."]

The Gas Federation now enters upon its second year. The first year, the year of launching an enterprise such as this, is always attended with a certain amount of anxiety. The machinery has to be created and has got to be set to work, but I am happy to know from what I have read of your activities during the past year that the inauguration of the Federation has been singularly fortunate. It has already attracted to itself the only representative Gas Association which at first was not a member, and the Federation may now be taken to be entirely representative of every aspect of this great national service and public utility. Lord Kennet touched upon the various aspects, and upon none, naturally, with more authority than the contribution which the Gas Industry has made to the provision of happy and comfortable homes. ["Hear, hear."] Most of you here are engaged in gas manufacture. I am the consumer. [Laughter.] I represent the consumer, and I thought to-night as I dressed for this dinner how very pleasant it was to have one's shirt warmed at the gas fire. [Loud laughter.] These are just little things, but significant things which contribute very much to our comfort, and it is so true that this Industry, with its great contribution to the three main things in life—viz., light, heat, and power—occupies a unique position in our national life. Lord Kennet could not, of course—he was too merciful and too experienced an after-dinner speaker—go into statistics at any length or to attempt to cover the whole ground, but there is one aspect which has always interested me in connection with the Gas Industry, and one which I myself have been brought into contact with in the Committee Rooms of the House of Commons and the House of Lords when your various projects were under consideration, and that is the remarkable success of the Gas Industry in reconciling three sometimes divergent interests which ought never to diverge, but sometimes unhappily do—*i.e.*, the interests of the consumer, of the workman, and of the shareholder. We seldom have heard of any trouble in this Industry; and that, I am convinced, is in no small measure due to the admirable arrangements which have been made whereby every employee in the great gas companies has a real stake in the business. Now that Industry is organized on so large a scale one of the features which distresses many of us is the dissociation of the individual workman from a share in his work or a share in the enterprise of which he is so important a part. In the old days of smaller industries, the enterprise was often a family affair, and all who took part in it knew each other and were mutually interested in its problems. In the Gas Industry you have overcome to a large extent the tendency to dissociation between the management and the workpeople. These very cleverly devised schemes, which I frequently attempted to understand and have expounded, I hope with success, to Committees, who also tried to understand—[laughter]—I judge by their works, because I know how admirably they have succeeded, and how successful you have been in promoting not only peace but also prosperity in the Industry. The figures are really remarkable when one reflects that no fewer than some 120,000 persons are directly employed in this Industry with an annual wage roll of over £15,000,000. Your Industry pays approximately £4,000,000 per annum in rates and taxes, and then there comes a figure which has given me special gratification—*i.e.*, the invested savings of the co-partner employees amount to over £4,500,000. [Applause.] I doubt if any other industry can show such happy results.

It is naturally a great pleasure to me to sit at the same table with probably one of my very oldest friends, Sir David Milne-Watson. We have been recalling this evening the old days that we spent together in Edinburgh, I should not like to say how many years ago, probably 40 years now, but they were very happy days indeed, and no man has done more than he has to promote the success of this great Industry. [Applause.] I think it must be largely due to his genial personality. ["Hear, hear."] I have just noticed a couple of his activities in the past 48 hours. Only yesterday afternoon he was addressing 300 chefs gathered at the Carlton Hotel—now you can understand why this dinner has been so good—[laughter]—and he



The Retiring President,
LORD MACMILLAN.

made this very significant observation: "If only people had good cooking they would be much stronger and better than they are." Of course, that is only the robust commonsense that we bring from Scotland into England. [Loud laughter.] Another observation by Sir David Milne-Watson is equally significant. At the Hotel and Restaurant Technical School on Monday he said: "It is desirable to train for the cooking in England of roast beef, plum pudding, and possibly haggis." [Laughter.] I have no doubt that with the help of gas cooking even that most refractory material, haggis, could be suitably presented.

The variety of the activities of the Gas Industry would tax the most attractive after-dinner speaker to descant upon. I have been very interested particularly in the report of the research work which you are carrying on. There is a tendency nowadays to designate everything by the name "research." If you look at your railway timetable you will find it is called "Railway service research"—[laughter]—and a good many things are dignified by that name which are not worthy of it, but real research—*i.e.*, research which is made by practised minds addressing themselves to problems of practical science—is probably one of the most valuable services that can be rendered. A single invention—if you just think back on one or two of the great inventions of the world—may do more than any Act of Parliament or any Government, however good, for the welfare of mankind. A single invention may do more than anything else that can be conceived, and therefore those men in the Industry who devote their time to

problems of research are assisting to bring about those things to which Lord Kennet alluded by attacking problems which may within a short time yield to treatment and enable us to find new uses for our coal, new means of purifying our atmosphere, new means of making life more comfortable for us all. These discoveries, all lying in your hands and awaiting the research of your students, may do more to promote comfort and welfare among us than probably anything else which can be conceived.

You are naturally much concerned with making known your own products, and you have possibly chosen as your President in the first year someone not connected with the Gas Industry just in order that he may sing your praises which, of course, you are too modest to sing for yourselves. I am a diligent student of your advertisements and I admire the versatility and the attractiveness of the way in which you present your wares. We got a very great admonition only yesterday, I think, from the Prince of Wales, who said, as you may remember:

> He who whispers down a well
> About the goods he has to sell
> Will never reap the golden dollars
> As he who shows them round and hollers.

I think you "holler" very successfully, but with very good taste, the merits of your wares. I have no doubt that your success is in no small measure due to your very judicious and very true advertising.

I have only really now to thank Lord Kennet for his speech, but perhaps he will forgive me if I digress for just one moment and thank you all most cordially for the honour you have done me by letting me be your President for your first year. I cannot say that I had any qualifications for it beyond great good will and interest in this Industry, as I hope I have in all the activities of our country. Therefore, I have found it a very great privilege indeed to be present at the inauguration of a body which I am convinced will achieve such valuable results, and I am coupling my thanks to Lord Kennet for his admirable speech in proposing this toast of "The Federation" with my thanks to you for you indulgence to me during my year of office.

Sir David Milne-Watson, proposing "The Guests," said:

It is a very great honour and a great pleasure to me to rise to propose the health of our guests. We are surrounded by a very distinguished company, and it would be impossible for me to mention all the distinguished gentlemen I see around me. I should just like to mention, however, with what great pleasure we see with us Mr. Kenneth Lindsay (Civil Lord of the Admiralty) and my old friend Mr. Clynes, whom we all welcome here, and I suppose I may also say we welcome him back to the House of Commons. ["Hear, hear."] We have also another very great friend in Mr. Silkin, Chairman of the Housing Committee of the London County Council. I am sure the other gentlemen present whom I am not able to mention, because it would take up the rest of the evening, will forgive me not mentioning them; I am proposing their health, but I am not in any way responsible for their manner of life. [Loud laughter.]

We have been exceedingly honoured to-night by the presence of Lord Kennet. It was a very great delight to hear him, and he has said things about the Gas Industry which are complimentary but which are also really and absolutely true. We thank him sincerely for coming here and telling us exactly the truth about the Gas Industry, which is not always what we hear. We deeply regret, of course, that Mr. Runciman is unable to be present to-night. He was going to be our guest and we were looking forward with the greatest pleasure to his company with us this evening. Unfortunately, he is confined to his room and is absent to-night, but we are hoping he will very soon recover from his illness and resume his duties. We hope and trust next year, if we are all spared and well, he will come to our banquet and, as the Head of the great Department which looks after the Gas Industry, he will be able to say what he thinks about it. I am sure we will want to send him a message of hope that he will soon be recovered from his indisposition. ["Hear, hear."]

Then we have a very old friend of mine in Lord Macmillan, who has made facetious remarks about my various activities with chefs and other people during the last few days. I will not go into his private affairs, but I will mention that he has a residence which goes by the name of Moon Hall, which perhaps gives a clue to the kind of life he leads in his seclusion! We regret the absence of Lord Dudley, especially as it is due to a severe illness. We sincerely hope in a few weeks' time he will have recovered his usual health and strength and that we shall welcome him as our new President.

Having proposed the health of our many guests, I hope I may be excused if I say a few words about the Gas Industry, its ideals, and what it stands for. Of course you know the Gas Industry is a very old industry. I do not, however, want to harp too much on the age of the Industry because you know we live in days when old things are out of fashion. I want to tell you that we are a very new Industry and that our outlook on life is entirely modern, if you take, for example, what we are doing, not only in lighting and heating and cooking, but in industry. You have heard from Lord Kennet to-night what Sheffield is doing in the way of the supply of gas for industrial purposes. No less than 60% of the output of the Sheffield Gas Company is now entirely industrial, and it opens a wonderful prospect for the Gas Industry; a wonderful prospect of clean towns and more efficient work in the steel and other great industries which are the backbone of this country. The Gas Industry is an extremely reliable industry. I believe I can say with absolute confidence that the Gas Industry has never let London down, or any other place. ["Hear, hear."] The Gas Light and Coke Company, which was the first gas company in the world, began to light Pall Mall in 1812, and I believe I can say without fear of contradiction that without one single night of interruption we have lighted Pall Mall ever since. [Applause.] I am sure you will agree with me that that is a wonderful record—123 years of service to the public. I know this slogan "Gas never lets London down" is a slogan which is not palatable to certain people. It is a slogan which so electrifies some gentlemen, who shall remain completely nameless, that they go into a transport of indignation. [Loud laughter.]

What is the reason why gas has gone on for all these years? It is because gas has kept abreast of the times. It has never failed because it has always determined and decided that it was going to be in the forefront. We have developed our business in such a way that we are, I believe, the most modern of all industries in the country. We are absolutely up to time. I could give you many illustrations of our up-to-dateness, but I will take one, and that is refrigeration. The public does not realize that out of this heating substance can come cold, but to-day we are offering to the British public a refrigerator which is absolutely foolproof—and that is saying a good deal in this country—[laughter]—and which is the most economical way of preserving food and making for economy and efficiency in the modern household. I look forward to the day with great confidence when there will not be a single household which has gas in it but which has not a refrigerator installed as part of its economy and of its natural accessories, just as water is laid on.

We in the Gas Industry are comparatively free of Government restrictions, and we hope long to be free of the type of restrictions which hamper certain other industries. In this connection I should like to read you an instruction which has recently been issued by the Ministry of Labour:

> "Separate departments in the same premises are treated as separate premises for this purpose where separate branches of work which are commonly carried on as separate businesses in separate premises are carried on in separate departments on the same premises. [Loud laughter.]

Can you wonder that the Gas Industry wants to keep itself as free as possible from instructions of that kind?

As an industry we have never failed, even in times of greatest stress such as the great strikes which have taken place from time to time. We have done more than any other industry to purify the air of our streets.

And now may I come to another aspect of the Gas Industry? Our by-products are sometimes forgotten. I have no doubt that most of you came to this dinner to-night in your own cars, and it is more than probable that you used benzole for driving your cars, and benzole is derived from the products of our carbonization. You have dined, I hope adequately but not too well, on a dinner completely cooked by gas. You have driven over roads that are made safe by dressing with tar. You have driven over wood pavements that are preserved with creosote, and those of you who are degenerate enough to have scent on your handkerchiefs have a derivative of the carbonization of coal. Your clothes, black as they are, are dyed by dyes that come from the carbonization of coal. What more do you want? I could go on and describe how you were probably born under a gas light, and finally you may be cremated by gas! I could go on for a long time enumerating the great benefits of the Gas Industry, but I do not propose to take any more of your time doing that to-night.

I can say with perfect confidence that there is no industry in the world which supplies such good fuel as gas, and we are not afraid of substitutes. We are not afraid of the sort of substitute with which we are challenged because we

know we have the very best thing that it is possible to have in the way of heat.

I am going to couple this toast with the name of Lord Falmouth, who has kindly come here to-night. Lord Falmouth has very little to do with gas, but I know he is very much connected with an industry which I believe is called electric. At the same time, amongst his other activities he is quite a friend of ours. He is on the Conjoint Conference of Public Utilities and is Vice-President for the Electrical Section. Mr. Cash, a well-known figure in the Gas Industry, represents water, and I am the Vice-President for gas.

Lord Falmouth, responding, said:

When I came here this evening I was in a state of very great trepidation. I had what I think must be the feelings of a single Abyssinian when he is surrounded by a thousand Mussolinis, because you are the dictators of the Gas Industry and I am but a humble representative of electricity. But after listening to the very kind remarks of Sir David, all my fears have been removed, and on a pleasant occasion of this kind I like to think of the ways in which our two industries run parallel to one another. First of all we use the same raw product. It is true that our raw product is treated very differently by the two industries, but the ultimate destination is the same—light, warmth, and power—and our two great industries play an enormously important part in cooking the English dinner and washing the English individual. I myself admit that I have learned something about gas to-night, and that is the supreme honour of the Gas Industry in that it has had the privilege of warming Lord Macmillan's shirt. [Loud laughter.] I am always very much impressed with the way your gallant Mr. Therm encourages his storm troopers by shouting "We never let them down," but our jolly Mr. Wizard in the Wall equally encourages his side by shouting "We never blow you up." [Loud laughter.] We both go to the attack in the most approved manner. We dig trenches. We throw up all sorts of entanglements which are only eventually put right by the borough steam roller.

I have always had a great respect for your Industry because I am proud, as a Cornishman, to think that it was not in London nor in any of the great industrial centres that the foundations of your great Industry were laid. They were laid in the little Cornish town of Redruth, not very far from where I live. Mr. Murdoch was a very great man, and he is really the originator of your Industry. It is a very big step from the cumbersome old beam engines that Murdoch also worked on to the great steam turbines which now spin so quietly at, say, Lot's Road or the great power stations all over the country, and it is an equally great step from the modest retort that Murdoch started his investigations on to the great gas-works at Beckton. What a great amount of development and research has taken place during the intervening years! Your great Industry is rapidly approaching its 150th birthday, and one would expect that an industry of your age would be looking forward to a period of quiet obscurity in its old age which an industry of your activity should be entitled to enjoy, and which no doubt other industries might hope you would enjoy. [Laughter.] But that is not at all the case. We find there is life in the old dog yet. We find, for example, in the Report of the Fuel Research Board recently published that if the efficiency of your great Industry had been the same to-day as it was in 1910 you would have consumed 8 million tons more coal than you do to-day. I will not quote electricity figures, because I am afraid they might be a little disappointing to some of you. Competition may take many forms, and undoubtedly our two industries do compete, but there is such a thing as fair and unfair competition ["Hear, hear"] and I think we may claim that the competition between us is fair and above board. Our two great industries are carrying on a great tradition, which has been built up for many years, of public service, and we are proud of the way in which we are both carrying out the very important duties laid upon us by Parliament. I cannot help feeling that for many years to come there will be ample room for both of us, side by side, carrying on the very important public work which we have laid our hands to. Therefore, once again, on behalf of my fellow guests and myself, I thank you very much indeed for your kindness in asking us to come here this evening.

Colonel W. Moncrieff Carr:

It is my honour and my privilege to perform what I am sure you will all agree is a most pleasurable duty, and that is to express our appreciation and thanks to our Chairman and President for his help and services during the past year. My Lord, I cannot express adequately the great help you have given to our Industry. The analogy between that great industry which you yourself have served throughout your life and that narrower industry—the Gas Industry—is one which must have been in the mind of Sir David Milne-Watson when he invited you on our behalf to be our President. If we have had a fault in the Gas Industry it has been in the fact that we have not been good advocates. We have not been the best advocates of our own products and of our own business. We have failed very often to present our case to the public whom we serve, in the best possible manner, but you, My Lord, have shown us to-night and on previous occasions on which you have been good enough to preside over our gatherings, that we can present a better case, and we are very grateful to you. We also admire the way in which you have conducted our business, and the technical men among us especially admire the meticulous care with which you have guided our proceedings.

I wonder if I dare venture a retort to the remark that was made by Lord Falmouth on the subject of our friends and competitors, the producers of electricity, and that retort would be the one which I made at our research luncheon a short time ago. We appreciate that there is electricity; we appreciate the merits of electricity supply. We are great users of electricity for power purposes in the Gas Industry, but I would say to Lord Falmouth that electricity will never be a fuel, and as a fuel electricity will never displace coal, or, for that matter, another fuel—oil. In the Gas Industry we are the producers of coal in its cleanest and best and most serviceable form for the service of the nation, both domestically and industrially, and that is the message which we are so anxious as an Industry for the nation to appreciate.

We are sometimes a little nervous of those who have the care of our Industry. We appreciate that we require looking after, but the birth of this new Federation, which

At the Second Annual Dinner of the British Gas Federation.

has emanated from our five other national bodies, has been a great step forward, and you, my Lord, have helped very much in the unification of our national bodies. United, we hope to put forward an united case. Therefore, to our friends who control us through the Board of Trade, and also to Parliament, who legislates on our behalf, we say we hope you will realize we are of importance to the nation. I take it that all our friends here probably do, but there are many in Government, municipal, and other services who look upon the Gas Industry not as a new industry, but as a very old industry, and therefore when we see in the Press reports such as appeared under the heading of "Our Political Correspondent" yesterday that one of His Majesty's Ministers had stated he was considering the advisability of placing upon public utilities the onus of bearing any increase in wages which might be made to the miners, we are naturally nervous. We believe, as a matter of fact, that that is absolutely incorrect. The statement went on to say that the burden could be borne by public utility undertakings—*i.e.*, both Lord Falmouth and his confreres, and we in the Gas Industry are considered able to bear such an increase without affecting the charge which we have to make to our consumers. A more serious statement was never published; no greater untruth could ever be issued, and I am perfectly certain that it is not the opinion of those who have the consideration of this very important matter before them. I trust you will forgive me for this digression in proposing this toast, but we do feel as an Industry that we want only a fair field and no favour, and we hope that whatever the burden which will have to be borne by the nation, we shall bear our share, and without discrimination, with the other users of coal without fear or favour.

On behalf of the British Gas Federation, we appreciate, my Lord, the great help which you have given to the Federation, and that help will for ever be remembered by the Federation when it meets in greater strength in another 150 years.

The toast was given with musical honours.

Lord Macmillan, in his response, said:

While the evening has been going on I have been thinking again of the wonderful examination papers I have mentioned previously, and I find there a question which I should like to address to the last two speakers. The question is: "How would you state the claims of gas to a technically minded customer who is undecided whether to install gas or electric appliances in a new house to be occupied by four persons requiring lighting, cooker, copper, fires, and hot water at the kitchen sink, lavatory basins, and bath?" [Loud laughter.] I think I should get two very different answers from the last two speakers, but I am quite sure they would both get full marks.

The ideal Chairman is both silent and sedentary, but I am afraid I have not shown those qualities to-night. Some time ago I was reading a book on law prepared for the layman, and there occurred in the book this very striking sentence: "Judges are human beings." [Laughter.] That naturally was very encouraging, but when the author went on and said: "Judges are human beings of more than ordinary intelligence and sagacity," my opinion of that author rose to very great heights. [Loud laughter.] The judge who is standing here at this moment would require to be either more or less than human not to appreciate the cordiality of your reception of this toast. I can assure you that I have been more than rewarded by your goodwill and friendship for anything I have been able to do in helping to launch the British Gas Federation.

In addition to the following, who were the occupants of the Top Table, a great number of guests were present representing many spheres of influence in Government, Municipal, Scientific, and Industrial affairs.

Sir Percy Alden, Knt., M.A.,
Chairman, British Institute of Social Service.

Sir Thomas Allen, Knt., J.P.

Alderman Sir Albert Atkey, Knt., J.P.

Lieut.-Colonel Sir Herbert Austin, K.B.E., J.P.

Alderman Sir Albert Ball, Knt., J.P.,
The Right Worshipful the Lord Mayor of Nottingham.

Professor Sir Joseph Barcroft, Knt., C.B.E., F.R.S., M.D., D.Sc.,
Professor of Physiology, Cambridge University.

R. Wilson Bartlett, Esquire, J.P.,
President, Society of Incorporated Accountants and Auditors.

A. Maurice Bell, Esquire,
President, Association of Public Lighting Engineers.

The Honourable George R. Bellew, M.V.O.,
Somerset Herald.

Sir Harold Bellman, Knt., M.B.E.,
Chairman, British National Association of Building Societies

Sir Russell Bencraft, Knt., J.P.,
Past President, British Commercial Gas Association.

Mr. Councillor H. Berry,
Chairman, Town Planning Committee, London County Council.

A. W. Beuttell, Esquire,
President, Illuminating Engineering Society.

Professor William A. Bone, F.R.S., D.Sc., Ph.D.,
Professor and Head of the Department of Chemical Technology, Imperial College of Science and Technology.

Leslie C. Bowker, Esquire, O.B.E., M.C.,
Remembrancer to the Corporation of London.

Sir Charles H. Bressey, Knt., C.B., C.B.E.,
Engineer-in-Charge, Highway Development Survey (Greater London), Ministry of Transport.

John C. Bridge, Esquire, C.B.E.,
Senior Medical Inspector of Factories, Home Office.

Colonel W. Moncrieff Carr, O.B.E., T.D.,
President, The Institution of Gas Engineers.

William Cash, Esquire, J.P.,
Past President, The British Commercial Gas Association.

Sir Lawrence Chubb, Knt.,
Honorary Secretary, National Smoke Abatement Society.

Sir Christopher Clayton, Knt., C.B.E., J.P., Ph.D.

The Right Honourable J. R. Clynes, J.P., M.P., D.C.L.,
President, National Union of General and Municipal Workers.

H. W. Cole, Esquire, C.B.E.,
Deputy Under-Secretary for Mines.

Major F. C. Cook, D.S.O., M.C.,
Chief Engineer, Ministry of Transport.

John E. Cowen, Esquire, J.P.,
Past President, British Commercial Gas Association.

Sir Herbert Creedy, G.C.B., K.C.V.O., J.P., M.A.,
Permanent Under-Secretary of State for War.

Sir Edward T. F. Crowe, K.C.M.G.,
Comptroller-General, Department of Overseas Trade.

J. C. Dalton, Esquire, D.L., J.P.,
The Right Worshipful the Mayor of Westminster.

Colonel A. E. Davidson, D.S.O., A.D.C.,
President, Institution of Mechanical Engineers.

The Right Honourable Sir John Davidson, G.C.V.O., C.H., C.B., M.P.,
The Chancellor to the Duchy of Lancaster.

W. Cecil Eaton, Esquire, C.B., M.A.,
Principal Assistant Secretary, Board of Education.

Sir Arthur Eborall, Knt., C.B.E.,
H.M. Chief Inspector of Taxes, Board of Inland Revenue.

E. V. Evans, Esquire, O.B.E.

The Right Honourable the Viscount Falmouth.

R. W. Foot, Esquire, O.B.E., M.C.

Sir Francis Goodenough, Knt., C.B.E.,
Executive Chairman, The British Commercial Gas Association.

Lieut.-Colonel Eric Gore-Browne, D.S.O., T.D., M.A.,
Deputy Chairman, Southern Railway Company.

Sir Ernest Gowers, K.C.B., K.B.E.,
Chairman, Coal Mines Re-organisation Commission.

Thomas Hardie, Esquire,
Past President, The Institution of Gas Engineers.

F. J. Harlow, Esquire, M.B.E., Ph.D., B.Sc.,
President, Association of Principals of Technical Institutions.

Brig.-General Sir Harold Hartley, Knt., C.B.E., M.C., F.R.S., M.A.,
Chairman, Fuel Research Board, Department of Scientific and Industrial Research.

D. M. Henshaw, Esquire,
Chairman, Society of British Gas Industries.

Sir Enoch Hill, Knt., J.P.,
President, Chartered Institute of Secretaries.

R. M. Holland-Martin, Esquire, C.B.
Chairman, Southern Railway Company.

Alderman Sir George H. Hume, Knt., M.P.

Mr. Alderman R. H. Hume, M.A.

Frank Hunt, Esquire, C.V.O.,
Valuer to the London County Council.

The Right Honourable Lord Hyndley,
Director, Bank of England.

Sir Henry Jackson, Bart., M.P., M.B., M.A., B.Sc.,
Chairman, London and Home Counties Traffic Advisory Committee.

Mr. Councillor W. P. Jackson, J.P.

Sir Robert Johnson, K.C.V.O., K.B.E., M.A.,
Deputy Master of the Royal Mint.

Frank H. Jones, Esquire,
Past President, British Commercial Gas Association.

Alderman Sir William Kay, Knt., J.P.

J. M. Kennedy, Esquire, O.B.E.,
President, Institution of Electrical Engineers.

The Right Honourable Lord Kennet, G.B.E., D.S.O., D.S.C.

Sir Stephenson H. Kent, K.C.B.

Major Geoffrey H. Kitson,
Past President, British Commercial Gas Association.

Stephen Lacey, Esquire, B.Sc.,
Vice-President, The Institution of Gas Engineers.

Sir William J. Larke, K.B.E.,
Director, British Iron and Steel Federation.

Lieut.-Colonel A. G. Lee, O.B.E., M.C., B.Sc.,
Engineer-in-Chief, Post Office.

Herbert Levinstein, Esquire, Ph.D., M.Sc.
President, Institution of Chemical Engineers

Lieut.-Colonel Sir Cecil Levita, K.C.V.O., C.B.E., D.L., J.P.

Kenneth M. Lindsay, Esquire, M.P.,
Civil Lord of the Admiralty.

Sir Stanley Machin, Knt., J.P.

Colonel E. E. B. Mackintosh, D.S.O.,
Director, Science Museum.

The Right Honourable Lord Macmillan, K.C., LL.D.,
President, The British Gas Federation.

Sir Henry P. Maybury, G.B.E., K.C.M.G., C.B.

The Right Honourable the Viscount Mersey, C.M.G., C.B.E., D.L

Sir David Milne-Watson, Knt., D.L., LL.D.,
President, National Gas Council.

Professor Gilbert T. Morgan, O.B.E., F.R.S., D.Sc., LL.D.,
Director, Chemical Research Laboratory, Department of Scientific and Industrial Research.

John Niven, Esquire,
Chairman, Baltic Mercantile and Shipping Exchange.

J. W. Beaumont Pease, Esquire, J.P.,
Chairman, Lloyds Bank Limited.

Sir Thomas W. Phillips, K.B.E., C.B.,
Permanent Secretary, Ministry of Labour.

Major Sir William Prescott, Knt., C.B.E., D.L., R.E., J.P.,
Chairman, Metropolitan Water Board.

F. W. Rattenbury, Esquire,
President, Institute of Municipal Treasurers and Accountants.

F. B. Richards, Esquire, M.B.E.

James F. Ronca, Esquire, O.B.E.,
Director of Gas Administration, Board of Trade.

Sir Isidore Salmon, Knt., C.B.E., D.L., J.P., M.P.

Archibald Scott, Esquire, M.B.E.,
Chief Technical Officer for Building and Town Planning, Ministry of Health.

Lewis Silkin, Esquire,
Chairman, Housing and Public Health Committee, London County Council.

F. S. Sinnatt, Esquire, C.B., M.B.E., D.Sc.,
Director of Fuel Research, Department of Scientific and Industrial Research.

H. C. Smith, Esquire,
Vice-President, The Institution of Gas Engineers.

F. C. Starling, Esquire,
Director, Petroleum Department, Mines Department.

Lieut.-Colonel H. K. Stephenson, D.S.O., D.L., J.P., LL.D.,
Past President, British Commercial Gas Association.

Major Sir Robert Tasker, Knt., T.D., D.L., J.P., M.P.

H. Stanley Taylor, Esquire,
President, British Commercial Gas Association.

Lieut.-Colonel C. W. Thomas, T.D.,
Chairman, British Refractories Research Association.

Lieut.-Colonel R. A. Thomas, C.B.E.,
H.M. Chief Inspector of Explosives, Home Office.

Professor Jocelyn Thorpe, C.B.E., F.R.S., D.Sc.,
President, Institute of Chemistry.

John D. Watson, Esquire,
President, Institution of Civil Engineers.

Lieut.-Colonel Edward W. Watt, T.D., J.P., M.A.,
The Right Honourable the Lord Provost of Aberdeen.

Frederick J. West, Esquire, C.B.E., J.P.

F. Wilkinson, Esquire.
President, Institution of Municipal and County Engineers.

Sir Evan Williams, Bart., D.L., LL.D.,
President, Mining Association of Great Britain.

D. R. Wilson, Esquire, C.V.O., C.B.E.,
H.M. Chief Inspector of Factories.

Henry Woodall, Esquire, J.P.,
Past President, British Commercial Gas Association.

W. B. Woodhouse, Esquire,
Chairman, Conjoint Conference of Public Utility Associations.

F. J. Wrottesley, Esquire, K.C.,
Recorder of Wolverhampton.

H. James Yates, Esquire.

A Vin d'Honneur

Gas Light and Coke Company Entertain Prominent Chefs

It has been remarked on more than one occasion in the past that the Gas Light and Coke Company never let a chance slip by of turning to good account any and every possible occasion which may serve to further the cause of gas utilization in all its phases.

The presence in London, therefore, of many prominent chefs, not only from this country but from all over the Continent, in connection with the Hotel, Restaurant, and Catering Exhibition at Olympia, provided an unexampled opportunity for demonstrating the pre-eminent suitability of gas for the catering industry. The Governor and Directors of the Gas Light and Coke Company entertained a large number of these chefs at a "Vin d'Honneur" at the Carlton Hotel, Pall Mall, S.W. 1, on the afternoon of Tuesday, Dec. 10 last, when they took the opportunity, in addition, of introducing to their guests one of the latest developments in hotel kitchen equipment, an example of which was seen in operation.

This was a solid-top gas range fitted with the "Chef" burner, as developed at the Watson House Industrial Workshops of the Gas Light and Coke Company and subsequently improved by Messrs. Benham & Sons. The special drip-proof burner gives a red-hot fire-bed and speeds up cooking as with the solid fuel range, thus, in fact, reproducing the conditions obtaining with the coal range, but with the added advantages of the cleanliness and flexibility of gas. Such results have been attained by substituting the usual cast-iron bunsen burner with a special burner from which the gas is fired horizontally on to a ribbed cone of refractory material, producing a very hot centre spot on the solid-top panels. The "Chef" burner is specially suitable for fast cooking, and vessels with concave bottoms can be let into the top of the hot-plate without interfering in any way with the combustion of the gas. In the first instance the burner was developed with a pile of broken refractory instead of the cone, and burners of the former type can usually be fitted to any standard solid-top range.

The chefs present at the reception displayed keen interest in the gas range, details of which were explained to them by representatives of the manufacturers and the Gas Light and Coke Company.

In a few words of welcome to those present, Sir David Milne-Watson, LL.D., D.L. (Governor of the Company), who was accompanied by the General Manager (Mr. R. W. Foot) and other senior officers of the Company, remarked upon the great pleasure it was to him to see there on that occasion so many members of the "gastronomical world." The community owed them a great debt of gratitude, for food was the most important part of one's life. Well-cooked dishes assisted towards better health, and Sir David observed that many of the ills to which they were subject were probably due in the first instance to indigestion brought about by bad cooking.

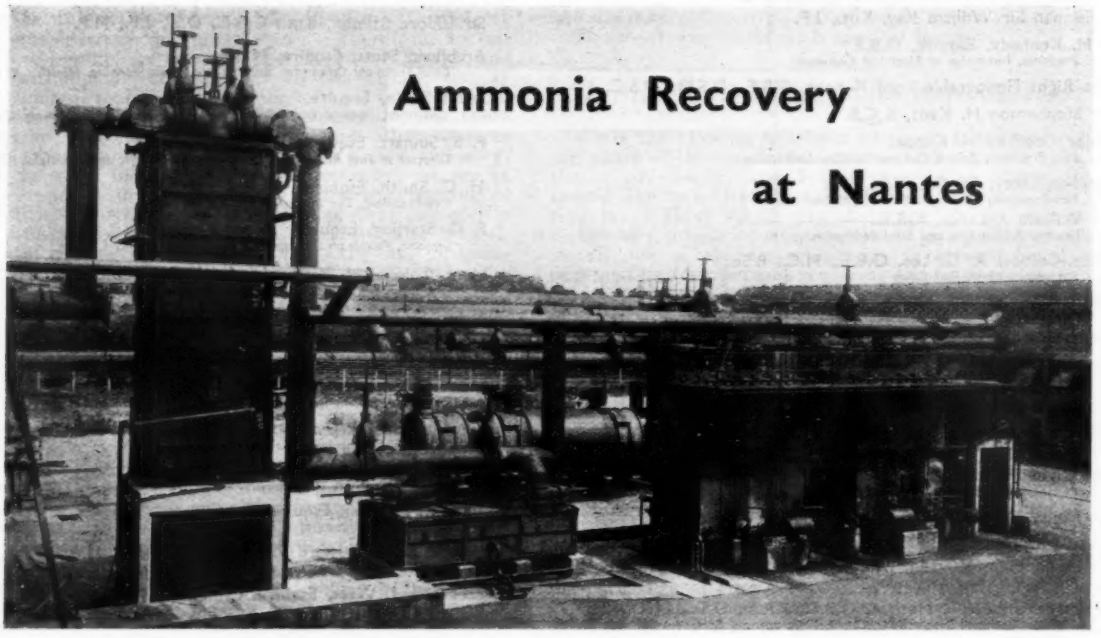
This was a very informal gathering, continued Sir David; they had taken the opportunity, knowing that so many of them were in London, of asking them there that afternoon to introduce them to the new "Chef" burner—a recent development which provided a great deal of heat at a given point, which was essential, he understood, to certain forms of cooking. Most of them probably already realized that gas was the best thing to cook by, and it was very pleasing to know that many distinguished chefs had all stated that they were perfectly satisfied with gas and would not cook with anything else. This was most encouraging. Though gas was an old fuel—people were using it in London 120 years ago—it was holding its own and increasing its uses.

They did feel, said Sir David, that they had something very good to offer them, and he was delighted to hear them reciprocate in their appreciation of gas as a fuel. He wished them all a very happy visit to London, and assured them that anything they could do for them—and he was speaking on behalf of the whole Gas Industry—they would be only too delighted to do. In conclusion, Sir David again expressed pleasure that so many had been able to attend.

An expression of appreciation of the Gas Light and Coke Company's hospitality was voiced on behalf of those present by the chef of the Carlton Hotel.

It is of interest to note that among the many users of the "Chef" burner in London are the Dorchester, Berkeley, and Savoy Hotels, as well as numerous restaurants.

Ammonia Recovery at Nantes



A general view of the ammonia recovery plant at Nantes, which is the subject of this article.

The following notes by Mr. C. Cooper, of W. C. Holmes & Co., Ltd., are based on the Paper read by M. A. Bolzinger before the 1935 Congress of the Union Syndicale de l'Industrie Technique du Gaz. A brief notice appeared in the "GAS JOURNAL," July 31, 1935, p. 268. M. Bolzinger is the Manager of the Nantes Gas-Works of the European Gas Company.

The works at Nantes serves a population of 210,000. The chief industries in the district are marine and general engineering, and the manufacture of preserves and biscuits. The annual sales of gas amount to nearly 900 million cu.ft., and the number of consumers is about 55,000, including a good industrial demand.

The original Paper is almost entirely confined to considerations of the factors affecting the concentration which can be obtained in liquors from the ammonia washers, and the study of means of improving this concentration, but it is perhaps advisable to give the following information on the Nantes works itself.

The works is situated on the estuary of the Loire, on the seaward side of the city. The present installations are based on an ultimate gas production of 5 million cu.ft. of gas per day, but some of the equipment was put in only for the needs of the near future, at a capacity of 3½ million cu.ft. daily.

The gas making and washing equipment is as follows:

Retorts.—These are intermittent vertical chambers arranged for steaming, the total carbonizing capacity being about 250 tons per day. They were constructed by the Otto Company and are similar to those at Wandsworth. For calorific value adjustment there is an external water gas generator.

Primary Condensers.—These are of the horizontal tube type, divided into two separate chambers.

Exhausters.—Turbo-exhausters were employed, one of the recommendations being their tar extraction characteristics. Provision was made for inserting a P. & A. tar extractor if required.

Secondary Condenser.—This was of the same type as the primary condenser, but in a single unit.

Ammonia Washers.—A Livesey washer and Holmes "Multifilm" washer are arranged in series, the liquor from the latter feeding the former.

The purifiers and naphthalene washer which were installed are not of particular interest to the subject of the Paper. It may be mentioned, however, that the naphthalene washer was a rotary machine.

All pumps are centrifugal pumps with electric drive.

As above mentioned, the subject matter of the Paper is entirely the study of ammonia recovery in the manner most economical for this particular works. The method adopted is, however, of considerable general interest.

The particular circumstances of the Nantes installation, in respect of ammonia recovery are that, while it may be permissible to discharge any effluents into the tidal water of the estuary, it is at the same time profitable to recover as much ammonia as can be obtained as strong liquor. The carbonizing system did not particularly lend itself to making strong liquors in the ordinary course of condensation and washing.

The carbonizing plant consists of vertical chamber ovens operated with continuous steaming. The rate of steam admission is 4% on the coal weight, but 90% of this is found undecomposed. The author finds that the sum of the contributions to the water content of the crude gas amounts to 11% on the coal.

The augmentation of ammonia liquor strength was obtained by applying two main devices:

(1) The spraying system used in the retort house was fed with all ammonia condensate liquor. The liquors flowing away from the foul main were found very weak, and were allowed to pass into the drains at the rate of make. Thus, in effect, all liquors were redistilled into the gas stream so that ammonia could afterwards be recovered under low-temperature conditions—*i.e.*, in the washing plant.

(2) At the latter stage no fresh water was to be used, but instead a well-stripped liquor from the spray system. This point is, of course, of less importance than the first, except in that a little ammonia is thereby conserved.

The conditions under which such a system of working could be used were considered carefully in advance, on the basis of available information of probable ammonia distribution in the cooling and condensing plant. The author particularly cites the Paper of Hollings (see "GAS JOURNAL," June 20, 1928).

Basic Principle.

It should be specially noted that the process in contemplation must have as its primary effect a multiplication of the ammonia content of the crude gas. That this is the case will be clear from a consideration of the fact that in an ordinary gas-works by-product system the ammonia in the gas at the entry to the washing plant is a fraction only of the 7 lb. per ton, say, which left the retort. The primary and secondary condenser liquors carry off the greater part in most cases. If the ideal is set before us that all liquors, strong or weak, must be redistilled into the gas at the retort bench, until the full 7 lb. per ton are recoverable at the washers, it will follow that the crude gases must be enriched in a proportion inverse to that fraction of the

total ammonia which now enters the washers. Subject, that is, to a falling off represented by losses of ammonia in the rejected liquor, and smaller amounts in the tar and washed gas. This is the problem attacked by Bolzinger, and the Paper states the method and the results.

Actually, the Paper shows that a recovery of 70 to 75% of the ammonia was made at a strength of 89 grammes per litre (say, 41 oz. strength). A portion of the remainder is naturally fixed ammonia, of less value than the free ammonia recovered.

The present writer was privileged to be concerned in the theoretical and practical design of the cooling and washing system, by which these results were achieved. The condensers, washers, and liquor handling plant were made and erected by Appareils et Procédés Holmes, 22, Boulevard Malesherbes, Paris. A full discussion is given in the original Paper, from which we will draw the following notes:

The general advantages of recovering ammonia at the maximum liquor strength have always suggested improvements on existing practice, but a limit of strength is recognized when the volume of liquor approaches the minimum represented by the virgin liquor production. The latter is derived from

Moisture in the coal.
Moisture formed from oxygen in the coal.
Undecomposed steam, where steaming is practised.

Limits of Ammonia Concentration.

In crude gas made with steaming, the moisture in the crude gas before condensing may be 12% of the weight of coal, or without steaming, in horizontal retorts, say, 6%. If water is used for the final washing, the concentration of ammonia in all the liquors may be from 1·5 to 4%.

An improvement on these figures is obtained by Hollings, by using specially prepared liquors of low strength in free ammonia, in place of water, for the final washing of the gas. Whether clean water or such liquors are used, a limit is found below which the quantity of final wash liquor cannot effectively be reduced, on account of partial pressure considerations. This limit is, for a temperature of 20° C., about 0·36 gallon per 1,000 cu.ft. of gas treated. This might amount to, say, 5½ gallons per ton of coal. The corresponding figure for 15° C. would be about 4 gallons per ton.

Corresponding equilibrium data are employed by Bolzinger in the calculation of the probable concentrations of condenser liquors obtained from the gas at various points in the system—*i.e.*, at various temperatures. At the highest temperatures it is possible to withdraw liquors of very low concentration, and it is such liquors that Bolzinger proposes to reject, after having selected a portion, of the lowest ammonia content, for use in the final washer.

The estimates on which the scheme is based follow this line of argument:

A certain volume of crude gas containing steam of the order of 12% of the coal weight, and a known quantity of ammonia, is condensed to, say, 70° C. in the first part of the primary condenser. This temperature is selected because it is calculated that the water deposited between the saturation temperature, about 80° C., and 70° C. represents that weight of water—*i.e.*, 12%—to be eliminated per ton of coal. (Saturation at 80° C. actually represents an excess of water in the gas, obtained by spraying the hot unsaturated gas in the retort house. This is a common experience in modern gas-making—namely, to have a higher saturation than is obtainable by cooling the gas without spraying.)

Condensate Liquors.

It was estimated from a series of tests on other condensers that this liquor would have an ammonia content of 0·15% free and 0·15% fixed ammonia. Some interesting differences were observed, by the way, in the course of these tests, between the results when the condensate left the condenser at the cool gas end, and when it left at the hot gas inlet. The former relation is obtained, of course, when the gas travels downwards in the condenser, and the latter when the gas travels upwards.

The difference is that when the gas and condensate travel downwards together the equilibrium conditions correspond closely to the temperature observed, this being practically the same for both. Where the flow takes place in opposite directions the liquor temperature is measurably lower than that of the gas, and the concentration of ammonia in the liquor is nearly that corresponding to the lower temperature, as if the gas, in fact, had been also at the lower temperature.

It is then calculated that 0·12 ton of water with 0·3% of total ammonia will carry off 0·00036 ton or 0·8 lb. of ammonia, the original yield from the coal being 5·5 lb., or 0·0025 ton.

Next it is assumed that the gases are cooled to 15° C., and a new condensate created. If there is equilibrium between condensate at 15° C. and the entering gas, the amount of ammonia abstracted can be calculated by means of known data. The conclusion is that a certain proportion of the ammonia, amounting to a third or a fourth of the original production, arrives at the entry to the washing plant proper, say, 1½ lb. per ton, or about 75 grains per 100 cu.ft.

Now, the desired result is that as much ammonia should enter the washing plant as can be achieved, and the standard set, at this stage, was that it should be equal to all the ammonia which has escaped the first condensation, which will be some 200 grains per 100 cu.ft.

To obtain these conditions it is necessary to return to the spraying system all liquors except the hot liquor first condensed, representing the production of water per ton of coal. This provides that there shall be only one other outlet for ammonia, which is the strong liquor made in the washing plant. By so returning all intermediate liquors the ammonia content of the gas at all stages rises to roughly three times the normal content.

In the Paper the calculations are carried backwards, to show that the initial ammonia content of the gas leaving the retort house will be equivalent to about 16 lb. per ton of coal. Fig. 1 is a reproduction, in familiar units, of the corresponding figure in the original.

Effect of Losses.

Now, if it is possible to pass 200 grains of ammonia into an efficient washing system, the liquor strength obtainable at 15° C., using water or liquor to the amount of 4 gallons per ton, or 0·267 gallon per 1,000 cu.ft., should be about 11 grammes per 100 c.c. We have already anticipated to remark that the tests showed an actual result of nearly

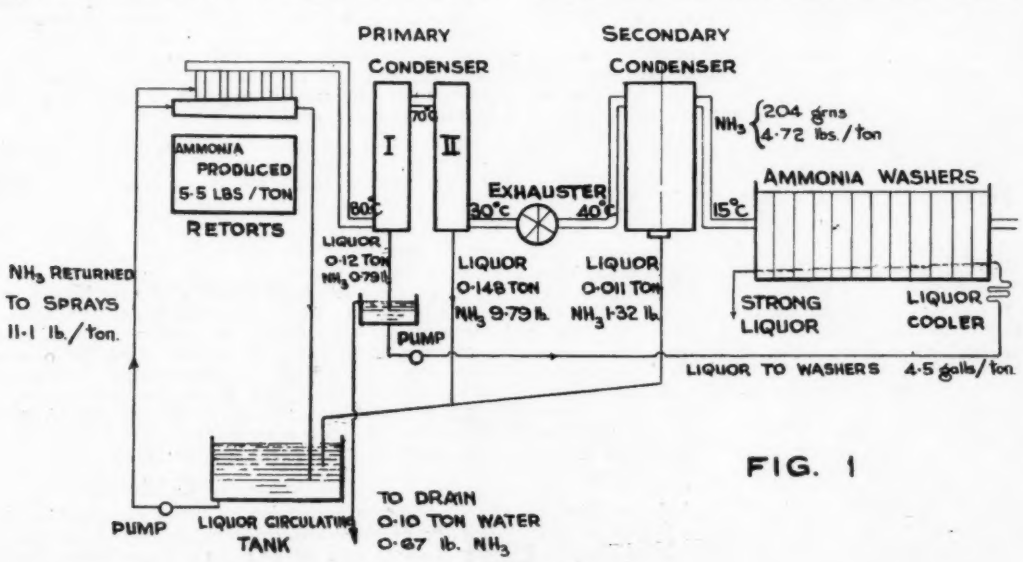


FIG. 1

9 grammes per 100 c.c. As there was an ammonia loss from the washer, due in a great degree to using liquor instead of water for washing, equal to 6% of the entering ammonia, the result is remarkably good.

It is clear that in operating this system the normal causes of ammonia loss must be kept down to the minimum, otherwise they will react disastrously to the effect desired; their influence on the final result will be three times as great as normal losses. Thus, all ammonia carried off by the tar is to this extent greater than before, and this loss is actually suffered by the strong liquor, as this is the only subsequent outlet for ammonia.

It is remarked in the Paper that in the first series of tests the liquor brought down in the turbo-exhausters along with tar was, by an oversight, transferred to storage instead of being sent back to the retort house to help to swell the main stream of ammonia. This accounts largely for the first series of figures being inferior to the last, where the full amount was returned as far as practicable.

In designing the actual installations special regard was paid to the possible losses, not only from this cause, but from exposure of liquor.

Fig. 2 is a reproduction of Bolzinger's scheme, which had several features incorporating automatic regulation, particularly of the water supply to the condensers.

It may be of interest to give an outline of the plant arrangements.

The primary condenser was actually divided in two parts, for the reason that the first condensate must be kept separate for running away to waste, because the total condensate to, say, 30° C. was much more than the rate of liquor make. It has, in fact, in the present account been indicated that the condensate at 70° C. represents roughly the water to be rejected, so that all the rest of the condensates must be collected, separated from tar, and returned to the sprays.

Actually, so long as the spraying liquor stock was kept full, all excess made was rejected, but only liquor from the first part of the primary condenser was allowed to flow to the drain. Therefore, the volume of condensate from this part must always be slightly in excess of requirements, and a little of this condensate may have to go into the circulation stock.

Liquors from the second part of the primary condenser, from the secondary condenser, and from all syphons such as those from the exhausters, are also returned to the circulating pumps, irrespective of their ammonia strengths.

The Livesey washers are considered as part of the washing plant proper, being operated strictly in counter-current with the gas, in series with the final ammonia washers, and the strong liquor goes to the ammonia storage.

Controls.

Automatic control of temperature is used on both parts of the primary condenser. The second part is maintained with a gas outlet at, say, 30° C., and the cooling water leaving it is passed into an overhead tank feeding the first part of the condenser. This tank is actually kept full of water, however, by a float valve delivering cold water. The control on the first half of the condenser can then be set for, say, 70° C., without interference between the two control systems.

A system of tar separating tanks is used, and these are arranged so that a time schedule can be laid down for the plant operator to handle the actual despatch of separated tar to the tar storage.

The washing plant, as mentioned, includes a Livesey washer in series with a Holmes " Multifilm " washer of 12 sections with double by-pass. The latter is of standard construction, except in one respect. This is that provision is made for internal cooling.

The explanation of this is not that inadequate cooling of the gas prior to washing was to be expected, but because of the fact that the heats of solution of ammonia and carbon dioxide and the heat of formation of ammonium carbonate are very sensible quantities when very rich gases are concerned. As the washer is fed with liquor containing a little free ammonia it is all the more important to keep temperatures down in the final washers.

Practical Observations.

Every care was taken during the period of the tests made for record in the Paper to maintain the temperature and gas flow conditions constant. Ammonia tests ran for about six hours each, and two or three sets of tests are incorporated in each record. The variations in rate of gas make were kept within 2% to 3% during the tests. Apart from these precautions no tests were undertaken until conditions had been established as regular over a period of days.

In Fig. 3 are given the main results obtained, detailing the temperatures, water content, and ammonia content of the gas at various points, and the offtake of products. The Author justifiably points out the improvement in recovery conditions as predicted, and, for the third set of figures, shows the additional effect resulting from the discovery and prevention of some minor mistakes which affected the earlier tests. The actual variations from the theoretical estimates are largely accounted for, partly by entrainment of moisture from one apparatus to another, and partly also by reason of the addition of some water gas from an external generator, after the exhausters.

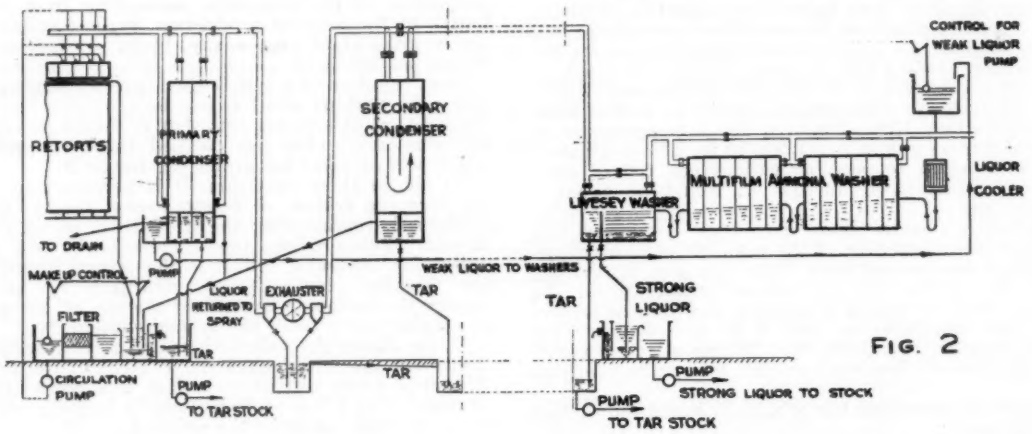


FIG. 2

A further examination of the sequence of operations in respect of the ammonia quantities is then made to enable a check to be established on the ammonia content of the gas at the retort house, with a satisfactory agreement (within 4%). This ammonia content is about 500 grains per 100 cu.ft., or about twice the normal ammonia production, in the earlier tests. The corresponding ratio for the last series would appear to have been 2½ to 3 times.

Now it is important at this stage to examine how far the final results quoted—*i.e.*, the high liquor strengths—are due to the special conditions created by the circulation system, and how far they could be explained by the efficiency of the actual apparatus employed. Two points should be mentioned:

(1) A temperature of about 15° C. is maintained in the final washers.
(2) The washing plant was operating at about half its rated capacity.

The ammonia content of the gas entering the washing plant was about 138 grains in the earlier tests and about 164 in the later ones.

It must be admitted that if the plant had been operating at full capacity the liquor concentration made would have been lower; according to the writer's estimate it need not, however, have been any worse than 10% less on either occasion. Also, had the temperature been, say, 20° instead of 15°, the liquor strengths could have been maintained at 5 to 6%, which would still have been a notable achievement, with a recovery in the form of strong liquor of about 75% of the whole ammonia.

Washing Efficiency.

The Paper concludes with an examination of the efficiency of the washing plant, following the lines indicated by Hollings and Silver in their Paper before the Institution

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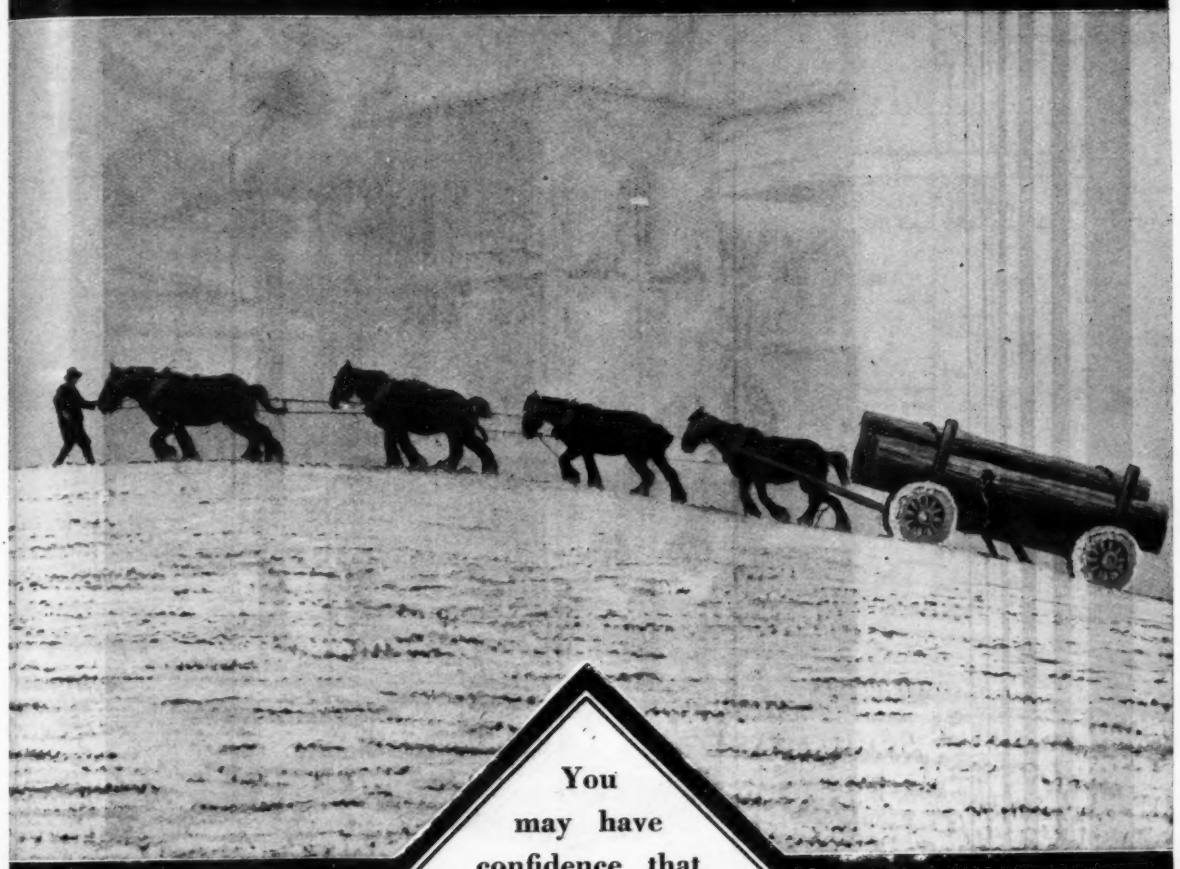

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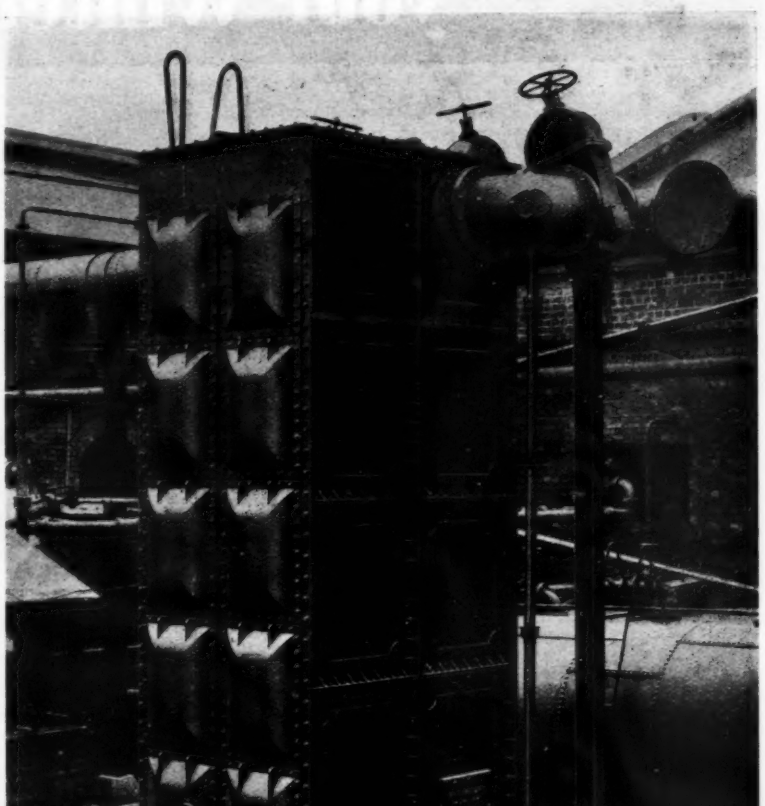

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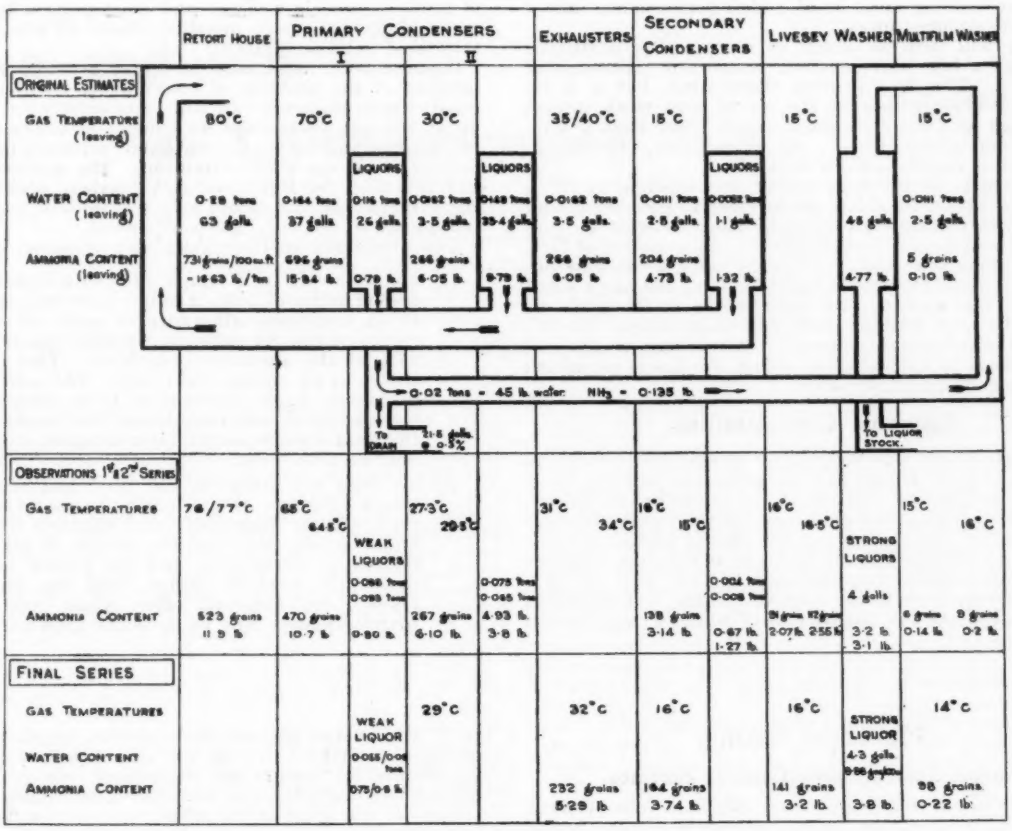


FIG 3

of Chemical Engineers, on the subject of the washing of gases. It should be mentioned that M. Bolzinger has himself made a theoretical examination of the subject, and submitted it to French technicians, but no full publication was made.

The whole scheme represents a standard of performance of familiar plant considerably higher than ordinarily obtained, and much above what is generally considered even possible. It is interesting to see how far it would operate in circumstances commonly met with in this country, where the presence of large proportions of water vapour operate against economical ammonia recovery.

It must be recognized that the conditions at Nantes were not remarkably difficult in this respect. A total moisture of 11% of the weight of the coal in the crude gas represents 25 gallons of virgin liquor per ton, and many continuous vertical installations produce 35, 40, and even more gallons, according to the proportion of steam added, and the efficiency of steam decomposition.

Some Possible Applications.

It is a fairly common observation to find the ammonia at the Livesey washer inlet as low as 50 grains. Such a case would be associated with a make of, say, 20,000 cu.ft. per ton and a calorific value of 450 B.Th.U. With such a make the ammonia yield would measure some 200 grains per ton at condenser inlet (calculating free ammonia only). The ideal performance on the Nantes lines would give the full 200 grains at washer inlet, less the free ammonia allowed to go to waste in the liquor passed into the drain. It may be observed that although in such a case there would be more liquor to reject, and, therefore, a possibility of losing more ammonia in this way, yet there is a certain compensation in the fact that the higher saturation temperature will assist in keeping the actual ammonia content lower. At the same time, the necessity and effect of using sprays on continuous vertical gas are not so great as on other types of carbonizing plant.

Another interesting case would be the application to horizontal retorts with Congdon pipes. The case of horizontal retorts without the Congdon system would not be likely to give good results, as fairly high strength liquor would appear early in the condensation, leading to a high ammonia loss in the liquor rejected.

The case of the horizontal retort with immediate spraying in Congdon pipes should, however, give very good results. The spray contributes a high saturation temperature, and at the same time the first condensate, that part which is to be withdrawn, is small—say, only 6 to 7% on the coal weight. Hence there should be a low ammonia loss in this liquor and a high proportion of ammonia in the gas entering the washers. If 6 lb. of ammonia are available and are confined to 14,000 cu.ft. of gas the ammonia entering the washers will be 300 grains per 100 cu.ft., and might well be made to yield better than 10% liquor. The reservation must be made that the available concentration is dependent on the CO_2 content of the gas, and this will be low in this particular case.

Ammonia Slip.

Reverting to the question of the washing efficiency, let us note that if a set of washers have to deal with ammonia in gas at 80 grains per cu.ft., and it is preferred to pass some 4 grains into the purifiers, the washers must have an overall removal efficiency of 95%. Moreover, if we are already collecting into stock some 30 gallons per ton of weak liquor, special attention to the final washers to keep down the amount of added water by a gallon or two does not appear to be of high importance, relatively.

But, if we are putting into the washers gas at 200 grains of ammonia, removal down to 4 grains now calls for 98% effectiveness. This is not, as a matter of fact, beyond the performance claimed for commercial sizes, but we have to consider two additional complications if the Nantes system is carried out in its entirety. These are:

(1) As the washer liquor represents the whole make, any excess of wash liquid over the bare minimum directly affects the strength in exact proportion.
(2) The proposal being to use a weak liquor in place of water, the free ammonia in this liquor renders it more difficult to keep down to a given figure for ammonia at outlet. Thus, 0·1% of ammonia in the entering wash liquor may represent an irreducible minimum of ammonia strip to 3 grains. The slip above this minimum is, therefore, to be 1 grain only.

Combining these two requirements, we are called on to wash the gas to 99·5% effectiveness, while using a theoretical minimum of water. As a matter of fact, this statement is nearly an impossible demand, as it would call for a washer of large sections with 200 operating bays. It saves the situation to note that a small increase of liquid flow, over the theoretical minimum, reduces the demand for a multiplicity of bays to a remarkable degree. The fact re-

mains that washing must be of a high performance indeed to meet the circumstances.

Nothing will help so much in solving this particular problem as a low and constant temperature throughout the washer. This is a general observation, but it is reinforced by observations on the use of such weak liquors by Hollings and his colleagues, which show that a temperature not above 15° C. is, in practice, almost indispensable if success is to be assured.

This is not to be taken as saying that washing at 70° is necessarily to be regarded as inefficient, nor even that washing with incompletely stripped liquors cannot be contemplated under such circumstances. As a matter of fact, it is clear that if a works can reject some 20 gallons per ton of liquor into the drains, as at Nantes, and use a small proportion for washing, the little extra could easily be rejected also, and washing done with clean water. At 70°, if this is the minimum temperature attainable, washing of high efficiency is still possible within the limits permitted by the higher partial pressures.

Ammonia Concentration.

The solution here put forward for promoting economy in liquor production for sulphate manufacture will not be of universal application. Where liquors are to be sold to outside buyers two other solutions may be preferred, either to sell the whole, and thereby, at the cost of higher carriage charges, to solve the effluent problem at the same time, or to carry out external concentration to 15%, 20%, or 25% liquors, saving much of the carriage charge, but requiring the disposal of the full quantity of effluent. Concentration of crude liquors is a cheap and easy process to-day, and many plants have been installed, either all new or by conversion of sulphate plants.

Concentration does not, however, provide a universal solution of the problem of economizing on ammonia disposal; where ammonia can still be of most value if worked up at the gas-works, and an effluent is tolerated locally, the maintenance of maximum liquor strength for sulphate making is always worth attention. The method proposed and practised by Bolzinger goes further, probably, than any hitherto which employs only a system of manipulating the liquors in ordinary gas-works plant.

Two final notes on the results may be made, which are:

(1) The ammonia in a sample of strong liquor from the second series of tests is only about 60% carbonated. If an additional allowance is made of about one-fourth of this for sulphide it would appear that some 25% of the ammonia is hydrate. This strikes the writer as an unexpected result. The acid gases are, of course, hardly affected in their concentration in the gas itself, and considering the ample contact in the final washers, some bicarbonation might reasonably be looked for.

(2) No data are given on the toxic characters of the liquor effluents. It is hardly to be expected that they will be improved, as compared with normal liquor production, but the return of all condenser liquors to circulation, and the taking only of the first, and weakest, liquor, and the final washer liquors, for disposal, offers some hope that the toxicity figures may be no worse than normal.

Municipal Rating

Annual Return Shows General Increases

Unless it be an indication of an all-round improvement in the social services, the annual statement of rates levied in various towns, for which we are again indebted to Mr. W. Allison Davies, the Preston Borough Treasurer, would appear to paint a rather more gloomy picture than its predecessor of twelve months ago.

This is the 51st annual statement and, in addition to the actual rates levied and the extent to which such rates have been increased or reduced, details are given of the charges for gas and water supplies and average prices received for certain electricity supplies, together with profits and losses on municipal undertakings by which rates in those towns have been reduced or increased. It should be mentioned that the statement is not intended in this respect to demonstrate the desirability or otherwise of municipal trading.

In referring to the statement of a year ago we remarked upon a fairly general reduction in rating—indeed, there was a reduction in the average rate in all four classes of town dealt with, Metropolitan Boroughs, County Boroughs, Boroughs, and Urban Districts. This year, unfortunately for the ratepayers, exactly the reverse is the case, and of the 342 municipalities included in the statement, but 27 can record a better state of affairs from the rating standpoint than existed twelve months ago. It is significant that of the 28 Metropolitan Boroughs every one shows an increased rate, though the highest and lowest rated Boroughs remain unchanged—namely, Poplar, with an increase of 1s. 4d. to 17s. 4d. in the pound, and Westminster, with an increase of 1s. to 9s. 6d., respectively. Bermondsey still retains second highest place with a rate of 16s. 6d.

In the 84 County Boroughs dealt with in the Return the average rate has increased from 12s. 10d. to 13s. 1¾d. in the pound. Merthyr Tydfil, with a rise of 11d., still has the highest rate at 28s. 5d., while Bournemouth has now joined Oxford with the lowest figure of 7s. 4d. In the 133 Boroughs the average rate has risen by 2½d. to 11s. 10d. in the pound, and Jarrow, with an increase of 1s. 3d. still retains the highest rate at 19s. 6d., with Port Talbot (1s. rise to 18s. 2d.) second. At the other end of the scale Hove maintains the lowest figure at 7s. 6d. In the 97 Urban Districts the average rate has risen from 12s. 5⅞d. to 13s. 1½d., and it is in this class of municipality that the highest rate of all is to be found—namely, Abertillery, with an increase of 2s. to 29s. in the pound. In this class Woking has displaced Esher at the other end of the scale, with a rate of 8s. 4d. The rates per head of population are low in some cases where the rates in the pound are high. The figures for many South Wales towns, as will be gathered from their previous mention, still speak all too eloquently of the distressed conditions which continue to exist in these districts.

Included in the particulars of domestic supplies, the Return gives the prices for gas per therm and per 1,000 cu.ft. within and without the districts, together with the declared calorific value of the gas supplied, as well as particulars for water and electricity. Other details of interest are the estimated transfers from municipal undertakings to the relief of the rates, and, conversely, the estimated transfers *to* municipal undertakings in respect of deficiencies. It is gratifying to be able to find but five examples of the latter throughout the whole Return, and these appear to make a total charge upon their rates of but £7,633, as compared with a figure of £15,500 last year.

On the other hand, there are twenty-two (as compared with 18) municipal gas undertakings contributing an aggregate sum estimated at, roundly, £145,600 (as against £134,700) towards the relief of the rates—the Nottingham Gas Department still being the most generous in this respect with its estimated quota of £31,500. The large majority of municipal gas undertakings, however, continue to direct the whole of their profits towards improved service and lower charges.

Many other interesting facts and comparisons can be gleaned from the Return, which also gives the allocation of the rates in the various towns; suffice it to say, however, that a very profitable study may be made of Mr. Allison Davies' interesting and instructive statement.

Extension of the Notice of Accidents Act

Additional Occurrences Included

The Dangerous Occurrences Notification Order, 1935, has been issued by the Home Office to extend the provisions of the Notice of Accidents Act, 1906, requiring notice of accidents in factories and workshops to be given to an inspector to include certain additional classes of occurrences in a factory or workshop whether personal disablement or injury is caused or not.

The provisions of the Order include explosion or fire causing damage to the structure of a room or place in which persons are employed, or to any machine or plant contained therein, and resulting in the complete suspension of ordinary work in such room or place or stoppage of machinery or plant for not less than five hours, where such explosion or fire is due to the ignition of dust, gas, vapour, or celluloid; explosion or fire affecting any room in which persons are employed and causing complete suspension of ordinary work therein for not less than twenty-four hours; and explosion of a receiver or container used for the storage, at a pressure greater than atmospheric, of any gas or gases (including air) or any liquid or solid resulting from the compression of gas.

Copies of the Order which comes into force on Jan. 1, 1936, may be obtained at His Majesty's Stationery Office, Adastral House, Kingsway, W.C. 2. Price 1d. net.

Coke and Gas as Complementary Fuels

by
J. GRAYSTON,
of Lea Bridge

A Paper presented before a Meeting of the Coke Salesmen's Circle, held at 28, Grosvenor Gardens, S.W. 1, on Wednesday, Dec. 11—Mr. B. H. ALMOND (Watford) in the chair in the unavoidable absence at the commencement of the proceedings of Mr. W. L. Boon, who usually presides at these gatherings.

In introducing a Paper on a subject of this nature I wish to make it quite plain at the outset that in my view while some of its details may be controversial, the broad principle of the complementary character of coke and gas is unassailable.

Gas and gas coke are so inter-related in the systems of production at present established, both technically and economically, that it is quite impossible to regard them separately. To make a somewhat bold assertion it is my definite opinion that gas and gas coke must of necessity always be complementary and never be competitors, and I propose to devote this Paper to an amplification of this statement and endeavour to show by a study of certain examples that, given a proper co-ordination of both interests, there is a very vast and unexplored field of potential thermal load awaiting our Industry. The expression "thermal load" is used advisedly because there are growing indications that we must regard our Industry primarily as a vendor of heat, and we must concentrate all our energies on capturing and retaining the heat requirements of the community with the commodities we have to offer—namely, gas and gas coke. While we all desire first of all to see an expansion of the sales of gas—the main source of a gas company's revenue—it is my contention that we are best serving the ultimate interests of our Industry by first meeting the requirements of the public in the manner which gives the desired service at a minimum cost. If we fail to do this we lay ourselves open to the constant depredations of our various competitors and fail to convert the public into permanent consumers of our thermal output, and though we may expand, it will only be at a fraction of the optimum rate of which we are capable. The acid test of any proposed application of heat is its cost to the consumer, and it is this which should compel us always to regard coke and gas as complementary. In every case where gas is unable to attract or retain a potential customer on account of cost we must be prepared to hold the field against all comers by means of coke.

In starting out to explore the fields of heating load awaiting development, there is one salient fact which we must always have before us—namely, that there are being used to-day approximately 40,000,000 tons of raw coal per annum for domestic heating, principally in the open grate and kitchen range. This is a field of legitimate competition free to all interests, and so far as one can foresee, the chief weapon we, as salesmen, have in our hands to open up this business is by insistence on the intense importance of smoke abatement. Each year we see the national hygienic significance of this question coming more to the fore, politicians are beginning to take an interest in its benefits, and the medical profession are united on its desirability.

Towards Smoke Abatement.

The policy started recently in Manchester and Leeds of providing absolutely smokeless cottage dwellings may be taken as indicative of the trend of public opinion. Perhaps these schemes are the forerunners of the complete abolition by legislation and the strength of public opinion of the domestic consumption of raw coal; when this comes, as I believe it will, and in our lifetime too, our Industry must try, through its salesmen, to be in a position of unassailable strength. This can only be achieved by definitely setting out to capture this market to-day, and not by waiting until smoke abatement is an accomplished fact. If we all do our share in propagating the doctrine of smoke abatement we are helping to create such a demand for the thermal output of the Gas Industry that our leaders may have to review all systems of production in order to cope with the increased demands for both gas and coke.

While, however, the extensive adoption of the policy of smoke abatement will open the door to a wide field of potential business, it will not of itself bring a single penny of additional revenue. We are not the only industry capable of satisfying the requirements of a smoke-free atmosphere; electricity, oil, coking, and low-temperature carbonization will all compete in the same field with us. On two grounds only can we hope to gain public recognition and support for our products—namely, cost and quality. Towards the latter, both so far as gas and coke are concerned, we have progressed far, and much has been done towards attaining uniformity and conformity with all that is best in present-day standards; progress and a changing public demand may change these standards, but there is no doubt that our products will always be manufactured to cater for the requirements of the community.

To obtain a better perspective of this potential load, I prefer to consider it in terms of the individual householder. Forty million tons is a huge quantity of coal, but actually it represents an average of only approximately 3½ tons of coal per annum per household. In other words, the average cost of fuel to the dwelling houses of this country is about 3s. per week. This is a figure to which I attach very great significance, and I have attempted to confirm it in various ways because to my mind it represents the limit of spending power of the family under the heading "fuel." This, I think, must be our datum, for there is not much point in framing a programme for selling heat which the bulk of the population cannot afford. No amount of salesmanship, emphasis on the inherent advantages of gas and coke, or advocacy of smoke abatement is going to bring an influx of business if what we are offering is too expensive for our public. Published figures by the Ministry of Labour and private investigating authorities are by no means unanimous as to what is a reasonable expenditure for a normal family under the heading of "fuel;" but after making a deduction for lighting and cooking it would appear that the average cottage dweller spends in the winter months 5s. 6d. and in the summer months 1s. 9d. per week on this account. I think the lack of uniformity in the available figures is because of the impossibility of comparing various parts of the country; the habits and requirements of the people are vastly different, as for example between Lancashire and London, or between Durham and Devon. To find out a fair figure for the area in which this Circle is interested, I have made many enquiries and find that the summer time cost of coal is about 1s. 6d. and the winter time 5s. per week. For the artisan population, whose weekly earnings are roughly, say, £3 per week, I think you will agree that this figure must represent the limit of their spending power. As this section of the community represents over 60% of the householders, these are the people whose needs we have to satisfy.

The Service Expected.

Having decided the cost, let us now examine the service which is expected. You will find that, generally speaking, the ordinary household expects in winter time to have a coal fire in at least one room from early morning until late at night, which, in addition, generally supplies the bulk of domestic hot water from a fire back boiler, an occasional fire in another room, and sometimes, in the event of sickness, a fire in a bedroom. The average summer time requirements are virtually confined to the provision of hot water and occasional fires, especially in the evenings of spring and autumn.

The point at issue is, therefore: "Can the Gas Industry give an equal or better service at no additional cost?" To this I would answer every time and in all circumstances, "Yes." To accomplish this I would suggest that the equipment of each dwelling house should consist of one or more open coke grates with gas burner ignition in the principal living rooms, a gas fire in each of the occasional rooms, a coke-fired boiler as the principal source of hot water, with a simple gas-fired multi-point water heater for occasional use. In winter time the fuel consumption of this equipment will be ¾ cwt. of nut coke, 1½ cwt. of broken coke, and 400 cu.ft. of gas at a cost of 5s. 4d. for each week; in the summer time 600 cu.ft. of gas and ¼ cwt. of

nut coke at a cost of 2s. 5d., slightly more than our permissible expenditure, but not a prohibitive excess in view of the additional service. The figures are actual observed costs of examples in the area of my Company, and to my mind constitute a typical example of the complementary nature of gas and coke. Gas alone would have been far too costly for the ordinary working man; coke alone would have been unsatisfactory and inconvenient. A combination of the two gives the required service within the reach of everyone's pocket. Just think what 6,000,000 consumers of this additional thermal load would mean to the Gas Industry. In gas it represents 156,000 million cu.ft. a year and in coke three times the present output of the entire Industry, and all for not very much more than is now being spent on raw coal.

This future lies largely in the hands of the rank and file of the Industry, in the scope of every salesman, and the need for reciprocity is paramount. I would that I were addressing these remarks to as many gas salesmen as coke salesmen; the coke salesman should not endeavour to win the continuous heating load and yet be content to let the intermittent demand go to the electrical concern; just as apathetic would be the gas salesman who captures the occasional heating and yet is content that the continuous open fires should still remain on raw coal. To some extent it would appear that the first steps lie in the sphere of the coke salesman, for through him we have the *entrée* to the entire field of cottage heating, which, provided the reciprocal interests of gas are fostered, opens up the vista of almost undreamed of outputs.

Central Heating.

Large-scale space heating is a field of thermal demand in many respects quite parallel with that of ordinary domestic heating. For central heating of any size we can offer satisfactory service by means of either gas or coke, and while the decision is ultimately one bound up closely with the policy of each individual undertaking, the coke salesman, generally speaking, needs to be broadly familiar with the economics of both, not as competitors, but as an alliance against our more serious competitor—oil. There are many typical and successful installations of each of these in operation to-day, but it is only within very recent years that coke has been able to enter into favourable competition with oil, which always had an advantage on account of its convenience and adaptability to thermostatic control. The gravity feed coke boiler has completely altered this position for us, and to-day we may say that the service given by gas, oil, or coke is practically uniform, and the only factor influencing the choice is one of cost.

Some very authoritative statements on this subject have recently been made at the Public Works Congress, and I cannot do better than recommend a study of these published figures in order to obtain a succinct statement of actual operation costs. It would appear that gas can compete, but only at a price which is lower than that at which most companies are prepared to sell; for new business the gravity feed coke boiler is definitely the best proposition we have to offer, and the only one which could possibly hold the business in the event of further reductions in the price of oil. Since this latter is bound up with an uncertain Excise Duty, we have to legislate for oil being sold at possibly cheaper prices than those prevailing to-day. From the point of view of the coke salesman, new business is only one aspect of large scale central heating; oil already has a very strong hold on this thermal demand, and you have to tackle the problem of regaining these consumers. The stumbling block in several examples which have come within my purview has been the cost of conversion; I would like to suggest that there is an urgent demand for a much cheaper conversion set than is available at the moment. Many of these oil-fired plants are of recent installation, and manufacturers, property owners, and so on have been somewhat loath to embark on alterations costing several hundred pounds for the sake of economies which would take several years to liquidate the cost of the conversion.

The heat requirements of those buildings which, for want of a better term, I shall describe as the " institution "—an omnibus term embracing public buildings, hotels, factories, offices, and canteens—are by no means satisfied by the provision of central heating. This we may regard as only providing the base load of heating, sufficient to give comfort conditions where the occupants have a certain amount of exercise and physical movement, as, for example, in the workroom of a factory. There will always be in any large suite of rooms certain places where an increased isolated heating is required. This we may liken to a peak heating load, as, for example, in the bedrooms of hotels or the manager's office in a factory. In the majority of cases this peak demand is of short duration, but is one of those examples which definitely reinforce the complementary nature of gas and coke, and it is a load which coke salesmen should assist in securing for gas. You are often in a unique position to do so, as the information concerning local heating in a centrally heated building comes first to those fostering the central heating installation. In this case the competitor is electricity, and it is claimed that this form of heat makes up the deficiency in radiant heat which accompanies central heating. So also does the gas fire, and in addition gives a degree of ventilation in which central heating is totally lacking. As usual, cost will probably decide the issue, and here I think is the main argument in the salesmen's hand.

Re-Housing and Flats.

There is one example of this combination of base and peak heating demand which deserves special mention; I refer to the present-day tendency towards " flat " dwellings. This feature of English home life has come very much to the fore during the last decade and is one which I expect is going to be more prominent in the future, especially in the metropolitan area, where congestion and recent slum clearance legislation has accelerated the " flat " system of rehousing. Progressive steps are being taken to secure for coke the base heating load of these blocks of residences, and in consequence the coke salesman frequently has first access to such.

May I suggest that in every case there is also a potential occasional or peak heating demand particularly for hot water, which is logically and economically a field for gas, and which it is in our best interests to stimulate. A more concrete example of the complementary values of gas and coke as heat origins than that provided by the corridors and bedrooms of flat dwellings could not be desired.

I have already referred to the Gas Industry as a vendor of heat, and there are to-day indications that this statement, instead of being uttered metaphorically, is being literally interpreted, and in point of fact there are contracts current where the gas undertakings undertake to furnish the total heat requirements of a block of buildings, or a factory, in all circumstances for a given sum per annum. In other words, the owner provides the installation and the gas undertaking sells him heat, and when in making the contract the owner stipulates the required minimum temperature, his further responsibilities cease. To this form of " all-in " contract I would direct the attention of both gas and coke salesmen, because I think we shall in a very short time witness a wide extension of this contractual principle. Provided the contract details conform to general legislation with regard to gas pricing, there is no obligation on the gas undertaking to provide the heat by gas or by coke or by a combination of both.

In effect this is coming very close to some two-part gas tariff, but there is a difference, and a fundamental one, because it definitely links coke and gas in the scheme for selling heat. Coke is introduced as a basis for a comprehensive heating tariff which automatically brings in its train a very considerable gas demand. I know that at present this is entirely an administrative question and definitely outside the province of either the gas or the coke salesman, but I mention it at this stage in support of my original statement as to the complementary nature of gas and coke.

Discussion.

The CHAIRMAN (Mr. B. H. Almond, of the Watford and St. Albans Gas Company), in opening the discussion, said that they were greatly obliged to Mr. Grayston for a Paper containing many points which were worthy of consideration.

It was foolish, continued the Chairman, for the representatives of gas undertakings to act on the assumption that the only thing they had to sell was gas and that coke did not matter. If salesmen had the real interests of their undertakings at heart they would see that there were occasions when it was more to the undertaking's advantage to sell coke than gas because of the cheaper services which could be provided with the former.

In the course of the general discussion which followed, reference was made to Mr. Grayston's figure of the weekly spending power of the artisan population, and it was asked whether initial costs of appliances had been taken into consideration and if the Author referred to existing or newly erected property. The opinion was expressed that the figure Mr. Grayston had given was beyond the means of the average men of the class to which he referred. Furthermore, it was necessary to obtain the landlord's consent to any alteration of the house occasioned by the installation of coke-burning appliances.

Need for More Coke Advertising.

It was suggested that more coke advertising should be carried out, while the hope was expressed that coke salesmen from adjoining undertakings should work in greater harmony, in connection with which point several speakers instanced cases of what might be referred to as the trespassing of coke salesmen into other undertakings' areas in search of sales. While there were no statutory limits in respect of the sales of coke as was the case with gas, the feeling was definitely expressed that the operation of coke salesmen in the areas of other gas undertakings was, generally speaking, hardly " playing the game."

NEW PARKINSON GAS FIRES WITH AUTOMATIC IGNITION

★ **UNIQUE HIGH-LEVEL CONTROL — no stooping down to light the fire.** The hand level tap, which operates the automatic ignition device, is situated at the top right-hand side of the fire.

★ **GREATLY INCREASED RADIANT EFFICIENCY**

This has been achieved by considerable modification to the fire-brick, both in design and material, to reduce heat losses and by the introduction of a new form of radiant.

★ **NEW SUPER-RAY RADIANT**

This greatly improved Parkinson radiant is so constructed that the maximum amount of heat is extracted from the flame and directed forward into the room.

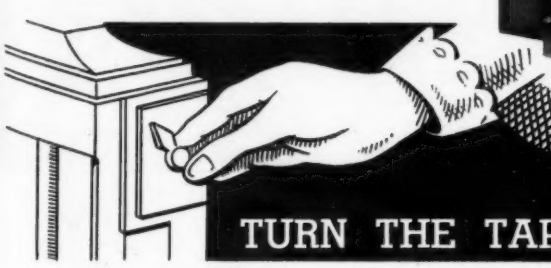
★ **ECONOMICAL**

Economy in gas consumption is an outstanding feature.

★ **STRIKINGLY ATTRACTIVE IN APPEARANCE**

The "Super-Ray" series of gas fires is available in a variety of strikingly modern designs—The "Dorchester," "Cumberland," "Welbeck," and "Ambassador."

THE "DORCHESTER"



TURN THE TAP—THE FIRE LIGHTS ITSELF

The
SUPER-RAY
SERIES OF GAS FIRES

by PARKINSON

With the introduction of the Parkinson automatic ignition device, it is possible to offer gas consumers a modern gas fire which can be lit by the turn of a tap—and without stooping down. This is achieved by the incorporation of a high-level control tap situated at the top right-hand corner of the fire. As the tap is turned on, the current from a small battery heats a wire spiral to a glowing heat. The stream of gas from the pilot impinges upon the red-hot spiral and is ignited. From the variety of designs available, a "Super-Ray" gas fire may be selected which will enhance the appearance of any room, and add an air of distinction to the most up-to-date decorative setting. If desired, an automatic floor-level control tap is available, or the fires can be supplied with ordinary injectors.

THE PARKINSON STOVE CO. LTD., BIRMINGHAM, 9

London Showrooms:

Terminal House Grosvenor Gardens - S.W. 1

Member of the Society of British Gas Industries

DESIGNED TO GIVE A VERY HIGH DEGREE OF RADIANT EFFICIENCY

MODERN FIRE DESIGN

THE

The introduction of the High "Beam" design, with its clean lines and flat front, has provided opportunity for establishing a new technique, simple and easily assimilable in the most ultra-modern interior decorative schemes.

The price lists of the Radiation firms illustrate an attractive series of models.

The

HIGH BEAM

(TRADE MARK)

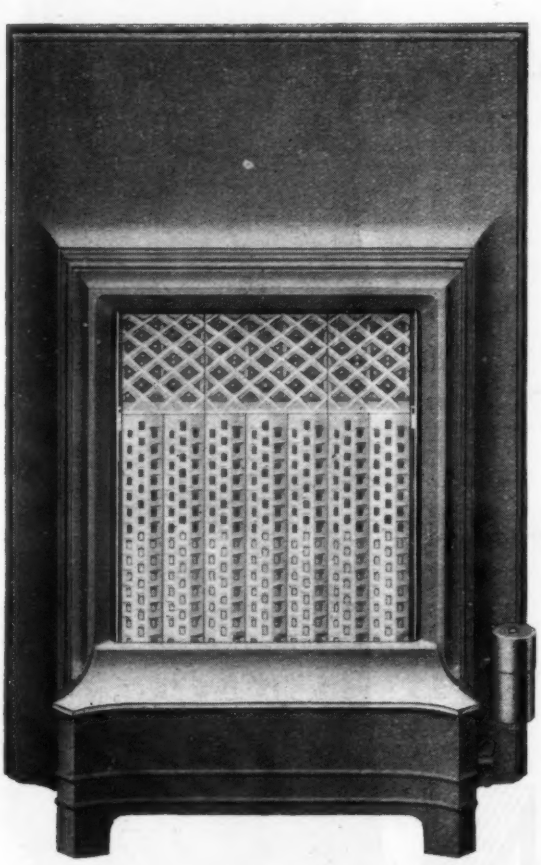
GAS FIRE

ONE THERM SAVED IN EVERY EIGHT

and more heat!

NIS ESSENTIAL IN
PRESENT DAY HOME

THE High "Beam" is the most modern design of fire demonstrably linked, through a continuous line of the Industry's most important Gas fire developments, to the earliest successful examples. It is to be expected that the many advantages enjoyed by the firms associated in Radiation Ltd. should always result in their appliances taking the lead, because the wealth of their individual and collective experience enables them to avoid unpractical excursions; to maintain that step-by-step progress for which Time has proved conclusively that there is no real substitute.



Adopt the High "Beam" and be sure of interest, security and a capital appreciation!

Please note specially the following:—

Patent Self-lighting Gas tap.

A 12½% cut in consumption with increased heat.

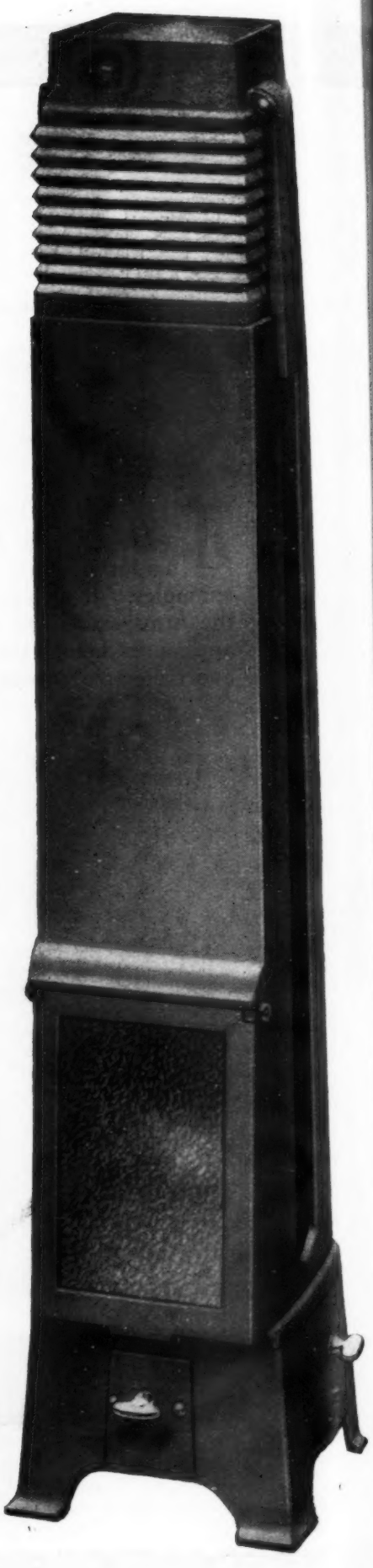
Radiants of improved design, robust and long-lived.

A remarkable series of colour finishes.

Radiation

Its heating qualities are exceptional. No heat whatever is wasted. No flue connection is required. The "Beacon" may be obtained in one, two, or three column units (with or without boiling burner) and in two lengths of column. Since the SHOPS ACT, 1934, was passed, the "Beacon" has been recognized as the heating unit adequately fulfilling the objects of the Act.

Sole Manufacturers: Cannon Iron Foundries, Ltd., Deepfields, Nr. Bilston, Staffs. London Office and Showrooms: Thames House, Westminster, S.W. 1.



CANNON

Mr. GRAYSTON called the meeting's attention to the recent publicity in connection with gas fires at 4d. per week. Coke fires, he observed, could be provided at that figure or less, and in the aggregate the total hire-purchase terms for the installations as discussed would not amount to more than 2s. 8d. per week over a period of years; he did not consider that this was beyond the pockets of those earning artisans' wages. It was not more than they spent a week on pleasures, so that they could afford to spend it on comforts. So far as the landlord's consent was concerned, the gas undertaking must go to him and convince him that his dwellings did not constitute lettable property unless they were equipped with apparatus which the public desired. A great deal depended upon the attitude of the landlord, and it was within the salesman's province to convince him that if he wished to obtain the best tenants he must provide the best residences.

In regard to the question of coke salesmen working in harmony, Mr. Grayston suggested that this matter lay within the jurisdiction of the London and Counties Coke Association, who would know to what extent this criticism was justified. But there was a fund of truth in the observation that coke salesmen must be friends with the gas salesmen as well as with other coke salesmen.

The CHAIRMAN pointed out that a gas undertaking could hardly *refuse* to sell coke in another undertaking's area if definitely asked to do so by a consumer. It was, of course, an open market, and he did not think anyone would expect an undertaking on no account to sell coke in another area. There was bound to be a certain amount of overlapping in every district.

Two Strings to Its Bow.

In regard to the figures which Mr. Grayston had given in regard to the potentialities of small consumers, the opinion was expressed that these were substantially correct. It seemed almost ridiculous to have to emphasize that gas and coke were complementary, because gas undertakings produced both; and in view of the fact that they produced about two-thirds of their heat in the form of coke it was rather absurd not to regard them as complementary. The fact that they had this solid fuel available as well as their rather more expensive gaseous fuel was one of the Industry's strongest points in dealing with the requirements of the public. The electrical industry could only supply one expensive fuel and had no alternative to offer. The Gas Industry had two strings to its bow. But the important question they had to settle was concerning the best division of the two fuels. The opinion was expressed that if they were going out for the all-gas house they would have to "scratch" for a long time. There was a tendency for coal and coke to be used generally for the base load, and there was a tendency for electricity to get in on the occasional load—and that was what they must fight against, because it could become a very serious matter.

The question had been raised, "Where was all the coke coming from?" But if everyone burnt a fair amount of gas as well the amount of coke available was going to follow it. It was stated that the example Mr. Grayston had given in his Paper did not dispose equally of the two products. By working out his figures it would be found that the consumer had only burnt one-eighth of his amount of gas in the form of coke; and if that figure was further exaggerated by the occasional use of electricity the sale of coke was not going to be so attractive as it should be. It was stated that there had been a great deal of talk lately on the subject of tariffs, and the suggestion was put forward that there should be greater development in the use of appliances which burnt coke and gas. For instance, for water heating they could have an independent coke boiler working in conjunction with a gas heater to balance up any deficiencies in the coke. Greater consideration should be given to consumers who burnt their fair quantity of gas and coke.

Inclusive Standing Charges.

It was stated that in some cases landlords paid the standing charges and included them in the rent of their houses, and in such circumstances it was difficult for gas to compete. In a particular instance of this the first block of houses had been all-electric; but the manager of the local gas undertaking had suggested that flues should be put in. That was a case where electricity was endeavouring to fulfil the base load; but it could not do it—and nor could gas.

The opinion was expressed that it was wrong to recommend coke grates for fitting upstairs, where gas fires were preferable for looking after the occasional load. If they could persuade the builder to install gas fires upstairs they might only be used very occasionally; but, on the other hand, a gas fire looked much better than an ordinary fireplace, and the cost of installation was very small, in addition to which it was there when it was wanted. They had yet to find a case where a consumer did not ever use a gas fire where it was available. They could do a lot more if they could only get gas fires in upstairs in the first place and coke grates downstairs.

It was felt that they were not adopting quite the right type of advertising. In the future more and more coke was going to be used in the domestic hearth, and it behoved them to show in print that it was a complementary fuel. Their advertising should picture the gas fire upstairs and the coke grate downstairs.

Mr. GRAYSTON said that he had endeavoured to show how the use of gas could be extended for the intermittent load with coke for the base heating load. It might be of some relative interest to them to know that, on an average, coke was contributing 2d. per therm towards reducing the cost of gas into the holder in the Metropolitan Gas Companies. But there was a corollary to that—namely, the more coke they could sell at a better average price the lower would be the net cost of gas into the holder; and so, the more domestic coke they could sell the more they were bringing down the price of gas—and the more gas they could sell the more coke there would be available. The relationship between the sales of coke and the average cost of gas into holder was more fundamental than was generally realized.

He would like to see some benefit given to those who burnt coke, and from what he had said they would appreciate that they were tending in this direction. In regard to "all-in" contracts, subject to certain local reservations, he did not see why what they knew as "all-in" heating contracts should not be extended to embrace the intermittent gas heating load. There was no reason why the aggregate charge should not allow for a certain amount of gas heating for intermittent purposes. He thought that this was a field worth exploring. They had to comply with statutory regulations with regard to the selling price of gas, but recent Acts had given them a certain amount of latitude, and under combined tariffs of this nature they could make considerable progress.

Plea for Price Reductions.

It was remarked that a point which Mr. Grayston had not mentioned was in regard to the prevailing prices of gas and coke. It was considered that they had reached a point where they could reduce the prices of both—and the desirability was particularly stressed of doing something better for consumers who were using a fair quantity of coke over the year. At the moment, customers using 5 cwt. per annum enjoyed the same privileges as those using 19 tons. The first reduction operated at 20 tons per annum. A special reduction was suggested for customers using a fair quantity of gas and coke.

In regard to this point, Mr. GRAYSTON remarked that the whole subject of reductions in price was too wide for him to be drawn into it. They might have read in the newspapers recently that public utility undertakings were going to have to pay more for their coal. Furthermore, shareholders would have something to say in regard to price reductions. So far as combined tariffs were concerned, he could only repeat that there was an opening here and one towards which in course of time they would have to move. It provided a definite opportunity for the expansion of the sales of gas and coke.

A suggestion was subsequently made as to the desirability of increasing the volatile matter in the coke produced for sale, with a consequent increase in the price. If more volatile matter were left in the coke instead of extracting 75 therms per ton, coke would have a better chance of selling. On this point, Mr. GRAYSTON observed that the technical and production sides of the Industry knew the demands of the Industry. If coke salesmen could sell more open coke fires there might have to be a step in the direction suggested; it was in their own hands. Another member held, however, that the converse was the case, and if they displeased a consumer over the quality of the coke they sold he might be lost altogether. It was up to the Gas Engineer to produce better coke. Mr. GRAYSTON pointed out that the number of complaints in regard to the quality of coke in the area was 0·1%. It was further stated that while they could sell coke grates there was no guarantee that coke was being burnt in them, and a case was instanced of Welsh nuts being utilized.

It was then observed that the question had never yet been answered as to what was the ideal type of coke to burn in the open fire. Some years ago the Fuel Research Board had carried out some tests which by no means proved that it was necessary to leave 8% of volatile matter in the coke. They produced coke with 2 or 3% of volatile matter which gave equally good results so far as the tests showed. Complaints, it was suggested, depended upon a simpler matter. For instance, a consumer might have a stock of coke on hand for some time which had become thoroughly dry and gave excellent results; he then ordered a new delivery which might be damp—with the result that it would not burn so satisfactorily. Solid fuel grates could not be regulated very accurately, and on many occasions that was the cause of the trouble—simply slight differences in consecutive deliveries. But whether leaving more volatile matter in the coke would cure the problem depended upon the methods of carbonization, how the coal was treated before it went into the retorts, and so many other factors, that they should, as coke salesmen, leave them to the production side.

Greater Co-operation Desirable.

In response to a request to explain more fully what was referred to as the competition he had experienced from gas salesmen, Mr. GRAYSTON said that he had quoted a certain example in which a gas salesman, either through ignorance or lack of co-operation with the architect of an institution attempted to sell gas heating where there was already a coke-fired central heating installation in the same building. He quoted this as a *raison d'etre* of his Paper. He had never experienced any actual antipathy from the gas side, and it seemed to him that this was the time to ventilate the great necessity for reciprocity of interests.

It was stated by another member that all their publicity work featured coke as well as gas—on their vans, on their letters and circulars, and, in fact, on everything that came from the undertaking. The gas salesmen carried with them coke contract

forms, together with coke delivery order forms. Their aim was to install either gas or coke, whichever was the more suitable for the particular installation. Last year this undertaking sold 174 coke grates, which were fixed by gasfitters, and this year they hoped to sell 250—all sold by gas salesmen. Half of these grates were sold on hire-purchase, a number of them being sold through the gas meter. If they could not be called coke salesmen as well as gas salesmen, what were they? They had their coke department which dealt with complaints, and it was there that disagreement was expressed with the idea of "specialists." The salesman should be capable, it was suggested, of dealing with both gas and coke. If he was not, much valuable time was lost.

Mr. GRAYSTON observed that he knew it was customary to utilize the same salesman for any customer's demands; he sold both gas and coke. But he thought that they must take the facts as they were. This was not the method of organization in the Metropolitan area, though there was something to be said for both methods. He was glad to hear of the combined advertising of gas and coke. Coke advertising was becoming much more prominent, thanks to the efforts of the London and Counties Coke Association. In reply to another query, he observed that the sale of "heat" was quite new and was sponsored by the Association in conjunction with the Gas Light and Coke Company; up to the present it had been an unqualified success, being due to the introduction of the gravity feed coke boiler. The "all-in" contract was an excellent step.

The suggestion was put forward that in order to make coke the ideal domestic fuel the London and Counties Coke Association should take the same steps in regard to the manufacturers of domestic appliances as they had done with the makers of commercial appliances. Valuable work had been done to persuade the manufacturers to put on the market appliances which would adequately burn coke.

An Inducement to Take the Coke Equivalent.

Mr. E. W. L. NICOL (London and Counties Coke Association) referred to the competition they were facing and said that he had been working for some time on the idea of a combined gas and coke tariff. He thought that every consumer who took his coke equivalent should be offered preferential terms. The coke equivalent was in the proportions at which gas and coke were produced at the works. In order to consolidate their position in the domestic market and to obtain full advantage from the appliances they had developed a tariff of this description might be considered. A substantial inducement might be offered to gas consumers to take their coke equivalent and the coke position might thus solve itself; then the ideal of 100% domestic sales might be nearer achievement.

Someone had suggested, continued Mr. Nicol, that the present price level was too high. This price level was the result of twenty-three years' labour, and he could not see any necessity for cutting it, especially in comparison with competing fuels. The tendency should be to increase the price, having regard to its smokeless characteristics. It had also been suggested that more volatile matter should be left in the coke, but that would result in a very serious waste of money on gas sales. The present tendency was towards the vertical retort and a resulting relatively free-burning coke. The difficulty he had been up against was to prevent it burning too freely. If the greatest care was not taken, banked-up fires had burnt out by the morning even with the draught reduced to a minimum. With any additional volatile matter this would be aggravated. Any fuel which was easy to ignite would burn away quickly and would be relatively less economical.

In answer to a question as to whether it was possible to produce a domestic water heating appliance which would burn no other form of solid fuel than coke, Mr. Nicol replied in the negative. Unfortunately for coke, the manufacturers had attempted to produce a grate which was eyually suitable for coke and anthracite, with the result that the grate operated much more to the detriment of coke. The air space was quite insufficient for coke and was obviously introduced to prevent waste when anthracite was used. The Association was doing its best to persuade the more important boiler manufacturers to understand the position, and they hoped a standard grate would soon be designed for the use of coke. So far as the domestic boiler was concerned, it would not be possible to produce one which would not burn nuts, but it was to the detriment of the boiler operation to do so. There was very little possibility of bituminous coal being used in ordinary domestic boilers.

Mr. GRAYSTON, in conclusion, remarked that he looked forward to the day when the whole of the Industry's coke production would be sold in the domestic field. It would thus assist in bringing down the price of gas.

Reference was made to Mr. L. J. Fowler's departure from the London and Counties Coke Association, and it was unanimously agreed that a letter be sent to him from the Coke Salesmen's Circle thanking him for the great help he had given them and wishing him all success in his new position.

The meeting then closed with a hearty vote of thanks to Mr. Almond for presiding, which the Chairman briefly acknowledged.

The small and compact appearance of the exterior of the Severn Valley Gas Corporation's travelling showroom above, compared with the remarkable spaciousness of the interior as seen in our photograph on the right, is a striking illustration of what can be done with "gas on tour."

The Camera Cannot Lie.

LONG SERVICE TO THE GAS INDUSTRY

A number of firms of long standing on the contracting and manufacturing side of the Industry have collaborated with the "JOURNAL" in the production of a series of articles, under the above title.

Radiation Limited

The first part of this article which appeared last week described some of the technical services rendered on the utilization side by the old-established firms whose names were household words in the Gas Industry many years ago, and who are now amalgamated as Radiation Ltd.

Helpful Results of Association.

The pooling of resources resulting from the amalgamation effected a speeding-up of their work and a more prolific output of new ideas. Since, however, these results are now common knowledge in the Industry, and have received the fullest measure of justification by its unqualified support, there is little need for recapitulation. Let it suffice that in all branches of gas appliance manufacture, Radiation Ltd. is known for thoroughness, intelligent anticipation of public requirements, and the high quality of its goods.

More Than a Million Spent on Propaganda.

Perhaps to-day, when competition from other interests becomes increasingly formidable, the work done by Radiation Ltd. relating to sales and propaganda may be considered by many to be one of its most far-reaching contributions to the advancement of the cause of gas. Certain

A Radiation Publication.

it is that, in this branch of Radiation's activity, a sum of well over a million sterling has been expended.

The Radiation public Press advertisements, begun in 1920, have been designed with the object of familiarizing the public with the modern gas "appliance" in all its many details. In these advertisements the keynote has been some point of service made possible by a particular feature or series of features of the appliance, notably, in the case of the gas fire, that of hygiene and ventilation—the exploding of the "bowl of water" myth, the importance of radiant design, and so forth. Later came emphasis of the value of the increased proportion of short infra-red rays in

A Continuous Moving Display.

the energy emitted, and recently stress has been laid, in the case of the High "Beam" fire, on the addition of upper or "scrubber" radiants, enabling use to be made of the proved slogan "One therm saved in every eight—and more warmth." Attention has also been drawn to the valuable adjunct to this fire—*i.e.*, the Radiation patent self-lighting gas tap.

The Service Side of Gas Cooking.

A big advertising problem had to be faced when the "Regulo"-controlled "New World" cooker was first introduced early in 1923. It was felt that the education of the public to the conception of automatic cooking in the oven could only be assured of ultimate success by the most forceful and thorough propaganda. Each successive campaign has been carefully adapted, stage by stage, to the growing receptivity of the housewife, until to-day (as the Bateman cartoon shows so humorously) the woman who has never heard of the "New World" cooker is rare indeed!

One of the most successful methods of popularizing gas cooking has been by means of the Radiation Cookery Book. This was first published in 1927, and the demands have been so extensive that further editions have been required at short intervals. With the production of each

edition, opportunity has been taken to incorporate additional sections giving further recipes suitable for "Regulo"-controlled cooking.

The Radiation Cookery Book has been supplemented by numerous booklets containing recipes for dishes—previously

The story of the short infra-red.

An early "New World" Advertisement.

cooked on the hotplate—and now adapted for cooking in the oven under "Regulo" control—thus demonstrating the widened scope of cooking without attention.

The enlargement and modernizing of the Research and Demonstration Kitchen at Radiation House also became necessary as a result of the general change-over to the new method of cooking under "Regulo" oven-heat control. This kitchen provides a centre where students from cookery schools, cooks, demonstrators, and others can receive advice from specially trained experts. In addition, a staff of cookery demonstrators, whose headquarters are at one of the Radiation Works, is at the service of enquirers and is always ready to provide useful information to those who are anxious to make the most of the advantages of the up-to-date gas cooker. A Radiation School of Cookery has thus been inaugurated.

Auxiliary methods of publicity have been employed judiciously from time to time including the use of films specially produced for Radiation Ltd. "What the Chefs Saw," which was shown in picture houses all over the country, will still be fresh in the mind of the Industry.

In presenting this outline of development work and propaganda, Radiation Ltd. feel that the opportunity should be taken of recording again their appreciation of the wholehearted way in which their aims have been endorsed, and their work assisted, by the Gas Supply Industry.

The joint efforts of all have contributed to put gas in the

Economy as the Keynote.

most enviable position with the public; and the firms associated in Radiation Ltd. can only feel the utmost satisfaction that their combined resources give them the privilege of maintaining so substantial a contribution.

The Savoy Hotel Chef seals the "New World" Oven.

From the Talkie Film ("What the Chefs Saw").

A Radiation Advertisement on a London Omnibus.

MAIN

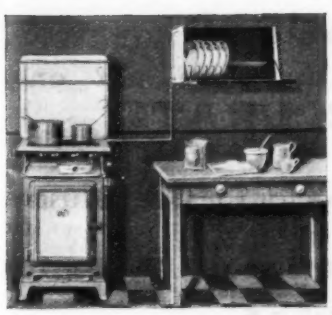
"P.R." HOT-CLOSET will ensure a warm service of Food.

THE "P.R." Hotcloset enables plates and other dishes to be warmed without interfering with the cooking of food on the hotplate or in the oven; cooked foods can be kept warm.

The Hotcloset is strongly constructed with cast-iron frame ends and sheet metal body. The exterior can be had in various enamel finishes, while the interior is finished in black vitreous enamel and contains a removable grid for accommodating the plates, etc.

The Hotcloset is heated by a luminous burner of very small gas consumption—costing only 1d. for 5 hours heating.

Two types are available, the Plate-Rack Fixing Type as shown above, and the Wall Fixing Type below. The former is supplied complete with cast-iron arms for fixing to the cooker hotplate, also backstrap and enamelled splash-plate.



Folders and further information upon application.

R. & A. MAIN LIMITED, LONDON AND FALKIRK

London Office and Showrooms: 48, Grosvenor Gardens, S.W. 1. ● Glasgow Office and Showrooms: 82, Gordon Street

STANTON
NEW SPUN IRON PIPE

Manufactured under Delavaud and Mairy Patents

Cast without chill in a metal mould and subsequently normalised by heat treatment.

The Stanton Ironworks Company Limited, Near Nottingham

★ Penultimate Test

The proof of the pudding is in the eating, and the **ULTIMATE TEST** of everything, including **BRASS GAS FITTINGS,** is in use.

But a **PENULTIMATE TEST,** over and above the assembly test, is the best insurance against poor results in service.

★

ALL
our products are
TESTED and GAUGED
before dispatch to customers; they are not only SOUND, they are ACCURATE.

BRASS GAS and WATER FITTINGS for the Gas Industry.

Jas. Southerton & Son, Martineau & Smith
Martsmith Works
SUTTON COLDFIELD

Telephone: SUTton Coldfield 2243-4 | Established 1800 | Telegrams: Martsmith Sutton Coldfield

Low Temperature Carbonisation, Ltd.

Annual General Meeting—Dec. 13, 1935

Points from the Speech of the Chairman, Col. W. A. Bristow

The Annual General Meeting of Low Temperature Carbonisation, Ltd., was held on Friday, Dec. 13, 1935, Col. W. A. Bristow (Chairman of Directors) presiding. Below are points from the Chairman's speech:

(1) Profits on trading account, £103,846; increase of £16,560.

(2) After writing off sundry non-recurring items and paying debenture interest, it is proposed to pay 3½% less tax on the whole of the ordinary share capital of £1,275,000.

(3) Cash at bank, on deposit, and Government securities total £436,710. In addition, investments in Doncaster Coalite, Ltd., £277,825.

(4) The Company's holding of ordinary shares in Doncaster Coalite, Ltd., has been valued at £120,000, and the reserve so created has been utilized for the purpose of reducing the amount representing patents, trade marks, goodwill, &c.

(5) The "Coalite" process has been still further improved; also the quality and size of the present "Coalite" fuel. This winter's sales constitute new record.

(6) Twenty-two Royal Air Force squadrons flying on Company's coal petrol this year. A number of roadside pumps now being erected for supply to motoring public. Quality and performance acclaimed as remarkable.

(7) Diesel oil now being made from coal. Six months' bench and road tests satisfactorily completed. New Diesel oil and chemical plant in course of construction ready in January.

(8) Large consignments of "Coalite" oil being despatched weekly to Imperial Chemical Industries, Ltd., Billingham, for conversion into petrol by hydrogenation.

(9) Further "Coalite" works expected to be in operation in time for next winter's trade.

A print of the Chairman's full speech will be sent on application to the Low Temperature Carbonisation, Ltd., 28, Grosvenor Place, London, S.W. 1.

Measurement of Temperature

A Cambridge Instrument Company Publication

A new publication of much interest has been issued by the Cambridge Instrument Company, Ltd. Entitled "The Accurate Measurement of Temperature," the booklet has been compiled in an endeavour to group together in a comprehensive and convenient form all the essential information regarding every generally used method of temperature measurement.

Great care has been taken in dealing with the first section of the booklet, covering the theory and application; this, while fully adequate, is concise and easily readable. For those who desire more detailed information regarding any particular type of temperature measuring equipment, there is appended a carefully selected bibliography. Included are tables of constants and comparative tables compiled from recognized authoritative sources.

The second section of the booklet gives comparative data, illustrations, and concise details of all the various types of temperature measuring instruments in general use, ranging from the simple mercury-in-glass thermometer to the optical pyrometer for the measurement of the highest temperatures.

Owing to the high cost of compilation the firm is making a small nominal charge of 1s. 6d., which, however, does not represent more than a small fraction of the actual cost of the booklet.

Uses of Gas in Shops

Provisions of a Section of the Shop Acts Explained

At the half-yearly meeting of the Hartlepools Chamber of Commerce which was held by kind invitation of the Gas and Water Company at the showrooms in Victoria Road on Nov. 25, Mr. J. R. Bradshaw, B.Sc., Engineer, Manager, and Secretary, introduced Dr. Winter, of the Radiation Central Laboratories, who gave an address upon the uses of gas whereby the provisions of the Section 10 of the Shops Act, 1934, might be fulfilled. It was in introducing the speaker that Mr. Bradshaw made an announcement regarding prospective changes in the method of charging for gas, which, he indicated, would be "a decided advantage to consumers."

In the course of his address Dr. Winter pointed out that for producing the greatest degree of comfort it was better to restrict the air temperature to 50° F. or thereabouts and to provide auxiliary direct radiant heat. This arrangement was more tolerable than too high air temperatures which readily produced discomfort.

The type of shop, whether open or closed, the normal occupation of the assistants, whether active, semi-active, or sedentary—*e.g.*, cashiers, and the effect of heated air on the stock and upon customers, had all been considered. A shop wide open of necessity had to rely upon radiant heating rather than upon air-heating. Active assistants would be comfortable in an air temperature of 50° F., while cashiers, &c., may require 65° F. air temperature. Local radiant heating would be required in cases where heated air may cause deterioration of stock—for perishable goods, or those which lose weight readily—*e.g.*, foods, tobacco, sweets, &c. "Zones," or "refuges," of comfort might be thus produced. The comfort of the customer would have to be studied as far as possible; the patron must not be repelled by conditions intolerable to himself which might be perfectly tolerable to the assistants.

The Newbridge Gas Pistol

A Useful Accessory

Another step towards the final elimination of matches in connection with the igniting of gas appliances is to be found in the Newbridge gas pistol recently introduced by the Horstmann Gear Company, Ltd., of Bath.

The pistol is of neat appearance and attractive finish, and while at first sight, perhaps, an unconscious impression of bulkiness is given, such will be eradicated upon closer examination, when the comfort of handling and ease of operation can be fully appreciated.

How the Pistol Operates.

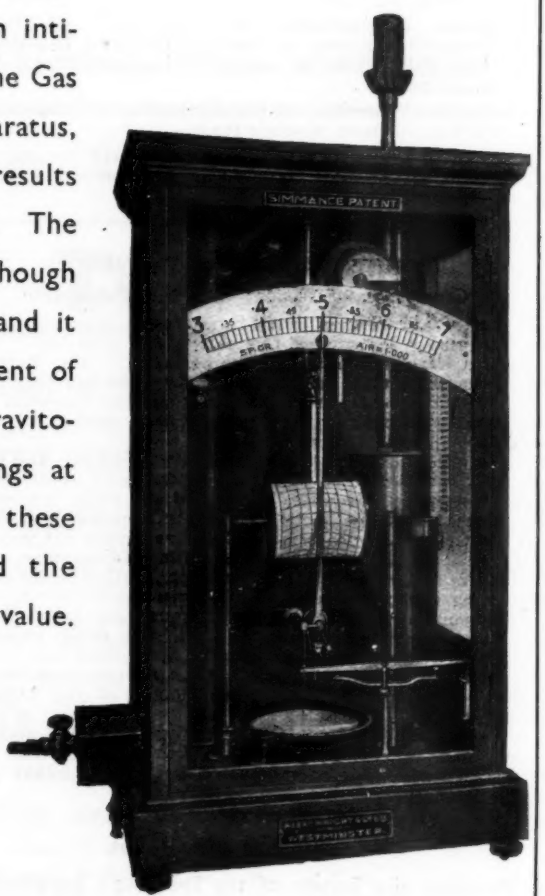
The pistol has a moulded bakelite handle and aluminium die-cast nozzle, and is supplied complete with suitable length of specially prepared rubber tube and standard connection for fitting to the tap rail of gas cookers. Two gas cocks are incorporated—one in the elbow fitted to the tap rail and one in the pistol. The action of lifting the pistol from the hook automatically opens the small gas valve in the elbow, and pressure on the trigger arm of the pistol opens the second gas valve. By depressing the trigger to its full extent the battery circuit is closed and the gas is ignited. Ignition is based on the electro-catalytic principle and the platinum alloy filament is similar to that fitted to the Comet igniters used for street lighting. The filament is reliable and sufficiently robust to withstand any shock.

By slightly easing the pressure the electrical circuit is broken, leaving the gas still alight. This action enables maximum life to be obtained from the battery. By relinquishing all pressure on the trigger the gas supply is closed, and the act of hanging the pistol on the hook provided for the purpose closes the gas valve in the elbow attached to the cooker. The elbow is fitted with right and left hand hook to enable the pistol to be fitted on either side of the cooker. The flame from the pistol projects approximately 4-5 in.

The battery is of the standard Newbridge type, and fitting renewals is as simple as with an ordinary electric torch. A battery will give ignition approximately 5,000 times for a replacement cost of 5d. Similar operations with matches would cost approximately 8s. 4d., so that the installation of the pistol can be proved in actual practice to effect an appreciable saving. The retail price is 8s. 6d., on which there is a 15% trade discount.

SPECIFIC GRAVITY OF GASES

In our previous advertisement (Dec. 4) we discussed some aspects of the necessity for testing and recording specific gravity. ● Whether you test or record, are you satisfied that your apparatus is the best and the most reliable? If the Simmance Specific Gravity Bell or the Simmance Patent Gravitometer is used, you can be satisfied on that point; but there are other kinds of apparatus, less convenient perhaps, or less robust and less reliable. ● Both the Bell and the Gravitometer were designed from intimate knowledge of the requirements of the Gas Industry. ● The Bell is a robust apparatus, simple in construction and giving accurate results with the expenditure of a little time. The Recorder also is robust in construction though delicate in adjustment and very sensitive and it records the specific gravity at every moment of the day and night. ● Simmance Patent Gravitometers are used by many Gas Undertakings at home and abroad, and the fact that these particular Undertakings have adopted the Gravitometer is convincing proof of their value.



ALEXANDER WRIGHT & Co. LTD. WESTMINSTER

Gas Markets and Manufactures

Stock Market Report

(For Stock and Share List, see later page)

The Account which closed on Friday was the last before the holidays, and during the week a considerable amount of selling took place on the part of speculators which brought about reactions in many sections. The gilt-edged market, though generally firm throughout the week, closed a trifle weaker, and home rails were adversely affected by reason of the coal position and the latest traffic returns. There were a few bright features among Industrials, but on the whole the section was patchy.

The volume of business in Gas stocks and shares was heavier last week and spread over a larger number of issues. Excepting the following quotations prices continued unchanged. Imperial Continental ordinary was in good demand, and the price hardened each day and finally closed 10 points up to 190. It may be remembered that the Association is now seeking Parliamentary powers to extend its activities to undertakings in this country. Shrewsbury ordinary was marked up 7 to 144½, and East Surrey rose 3 to 135½. The only set-back occurred in Gas Light units which dropped a further 3d. to 27s. 6d.

The Industry has been swiftly brought face to face with the coal situation, for the colliery owners are requesting utility undertakings and industrial users generally to pay an increase on all existing coal contracts for the express purpose of raising the miners' wages. It is possible that until the position clears there may be some small reactions in the values of gas stocks, though with the maintenance of the usual dividend rates quotations should speedily revert to their former levels.

Current Sales of Gas Products

The London Market for Tar Products.

Dec. 16.

There is little of interest to report in the prices of tar products, current values being as under:

Pitch, about 40s. per ton f.o.b.
Creosote, 5¼d. to 5⅜d. per gallon.
Refined tar, 4d. per gallon in bulk at makers' works.
Pure toluole, 2s. 9d. to 2s. 10d.; pure benzole, 1s. 7d. to 1s. 8d.; 95/160 solvent naphtha, about 1s. 8d.; and 90/160 pyridine, about 4s. 9d.—all per gallon naked at makers' works.

Tar Products in the Provinces.

Dec. 16.

The average prices of gas-works products during the week were: Gas-works tar, 24s. to 29s. Pitch—East Coast, 41s. 6d. to 44s. f.o.b. West Coast—Manchester, Liverpool, Clyde, 41s. 6d. to 44s.* Toluole, naked, North, 2s. 1d. to 2s. 3d. Coal-tar crude naphtha, in bulk, North, 7¾d. to 8d. Solvent naphtha, naked, North, 1s. 5¾d. to 1s. 6¼d. Heavy naphtha, North, 1s. to 1s. 1d. Creosote, *ex* works, in bulk, North, liquid and salty, 4¾d. to 5d.; low gravity, 4½d. to 4¾d.; Scotland, 4¾d. to 5d. Heavy oils, in bulk, North, 4¾d. to 5d. Carbolic acid 60's, 2s. 4d. to 2s. 6d. Naphthalene, £13 to £15. Salts, 75s. to 80s., bags included. Anthracene, "A" quality, 2½d. to 3d. per minimum 40%, purely nominal; "B" quality, unsalable.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls whatever they may be.

Tar Products in Scotland.

GLASGOW, *Dec.* 14.

Supplies of most products are now definitely scarce in this district and prices are therefore firmer.

Crude gas-works tar.—The actual value is 29s. to 30s. per ton *ex* works in bulk.

Pitch.—Value is unchanged at 35s. to 37s. 6d. per ton, f.o.b. Glasgow for export, and round 35s. per ton *ex* works in bulk for home trade.

Refined tar is still available at from 2½d. to 2⅝d. per gallon, f.o.r. makers' works in buyers' packages.

Creosote oil.—Only small quantities are available and prices are steady. B.E.S.A. Specification, 5½d. to 5¾d. per gallon; low gravity, 5⅝d. to 5⅞d. per gallon; and neutral oil, 5⅝d. to 5⅞d. per gallon; all f.o.r. in bulk.

Cresylic acid.—Values are now purely nominal as under: Pale, 97/99%, 1s. 5d. to 1s. 5½d. per gallon; dark, 97/99%, 1s. 3d. to 1s. 3½d. per gallon; pale, 99/100%, 1s. 5d. to 1s. 6d. per gallon; all *ex* works naked.

Crude naphtha is changing hands at round 5d. to 5½d. per gallon, according to quality and district.

Solvent naphtha.—90/160 grade is 1s. 4d. to 1s. 4½d. per gallon, and 90/190 heavy naphtha is 11½d. to 1s. per gallon.

Motor benzole is commanding 1s. 3½d. to 1s. 4d. per gallon in bulk at makers' works.

Pyridines.—90/160 grade is 5s. 6d. to 6s. per gallon, and 90/140 grade is 6s. to 6s. 6d. per gallon.

Benzole Prices.

These are considered to be the market prices for benzole at the present time:

	s.	d.		s.	d.	
Crude benzole	0	9½	to	0	10	per gallon at works
Motor "	1	3	"	1	3½	" " "
90% "	1	4	"	1	4½	" " "
Pure "	1	7½	"	1	8	" " "

Contracts Advertised To-Day

Boiler (Lancashire).
Plymouth Gas Department. [p. 862.]

Pipes and Fittings.
Ripon Gas Department. [p. 862.]

Tar.
Burton-on-Trent Gas Department. [p. 862.]

Trade Notes

Pass-Out Steam Engines.

We have received a copy of the recent publication by Messrs. Ashworth & Parker, Ltd., Riverside Works, Bury, Lancs., dealing with their well-known pass-out steam engines for the generation of cheap electrical power. The booklet contains illustrations of typical installations including one at the Oldham Gas-Works which was opened by Prince George, now Duke of Kent, in May, 1933.

Diaries, Calendars, &c., Received

Seasonable gifts in the shape of useful diaries, calendars, &c., have been received from the undermentioned friends, whose good wishes are heartily reciprocated:

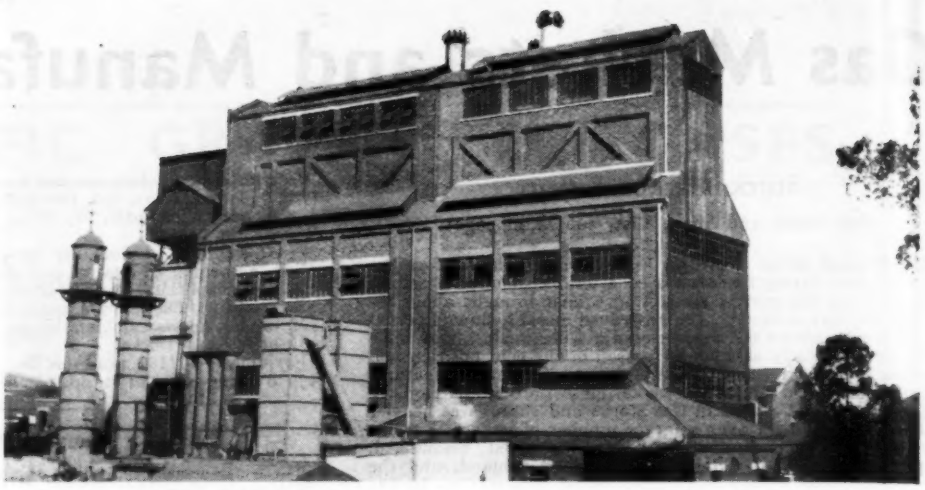
Gas Meter Company Ltd., Kingsland Road, E. 2.
Stanton Ironworks Company, Ltd., near Nottingham.
R. & J. Dempster, Ltd., Manchester.

Legal Intelligence

Sherborne Gas and Coke Company

In the Chancery Division Mr. Justice Bennett has granted a petition by Sherborne Gas and Coke Company, Ltd., for the confirmation by the Court of an alteration in the form of the Company's constitution by substituting a memorandum and articles of association for the Company's deed of settlement and existing articles.

It was stated that the Company under the new scheme proposed to extend its objects to enable it to enlarge the local area of its operations and make and deal with coal tar, coke, and other fuels as well at pitch, asphaltum, ammoniacal liquid, creosote, dyes and dyestuffs, oil, and other residual products to be obtained from the manufacture of coal gas. The Company also desired to let, deal with by way of sale, or hire, gas appliances and fittings and to conduct any other business that could conveniently be carried on in connection with the principal business. The Company, it was stated, is 99 years old.



A new picture from South Africa showing (left) the first installation and (right) the second installation of Glover-West vertical retorts built to the order of the Johannesburg Municipal Gas Department at the Cottesloe gas works.

Practise **SCIENTIFIC CONTROL** *to the best advantage by adopting the*

WEST

SYSTEMS FOR MODERN GAS & COKE PRODUCTION

Glover-West Vertical Retorts • Westvertical Carbonizing Chambers • West Coal and Coke-handling Systems

DESIGN, MANUFACTURE AND ERECTION BY

WEST'S GAS IMPROVEMENT COMPANY, LTD.

MANCHESTER: Albion Ironworks, Miles Platting — 'Phone: COLLYHURST 2961 : 'Grams: "STOKER, MANCHESTER"

LONDON: Columbia House, Aldwych, W.C.2 — 'Phone: HOLBORN 4108 : 'Grams: "WESGASCO, ESTRAND, LONDON"

STOCK AND SHARE LIST

Official Quotations on the London and Provincial Stock Exchanges

Issue. £	Share	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations. Dec. 13.	Rise or Fall on Week.	Transactions, Lowest and Highest of Week.
1,551,868	Stk.	Sept. 9	7	7	Alliance & Dublin Ord. ...	133—143	...	139½—141
374,000	,,	June 24	4	4	Do. 4 p.c. Deb. ...	97—102	...	...
557,655	,,	Aug. 12	7	7	Barnet Ord. 7 p.c.	165—170	...	170—171
300,000	1	Oct. 7	1/9⅓	1/4½	Bombay, Ltd.	1⅛—1⅛	...	26/-
178,480	Stk.	Aug. 12	9½	9½	Bournemouth sliding scale ...	222—232	...	...
550,050	,,	,,	7	7	Do. 7 p.c. max. ...	168—173	...	...
489,160	,,	,,	6	6	Do. 6 p.c. Pref. ...	147—152	...	...
50,000	,,	June 24	3	3	Do. 3 p.c. Deb. ...	83—88	...	...
262,025	,,	,,	4	4	Do. 4 p.c. Deb. ...	105—110	...	...
335,000	,,	,,	5	5	Do. 5 p.c. Deb. ...	123—128	...	...
357,900	,,	Aug. 12	7½	7½	Brighton, &c., 6 p.c. Con. ...	170—175	...	...
649,955	,,	,,	6½	6½	Do. 5 p.c. Con. ...	156—161	...	...
205,500	,,	,,	6	6	Do. 6 p.c. B. Pref.	142—147	...	...
1,487,500	,,	July 8	5	5	Bristol, 5 p.c. max.	118—120a	...	...
120,420	,,	June 7	4	4	Do. 1st 4 p.c. Deb. ...	102—104a	...	...
217,870	,,	,,	4	4	Do. 2nd 4 p.c. Deb. ...	101—103a	...	...
328,790	,,	,,	5	5	Do. 5 p.c. Deb.	127—130a	...	...
855,000	,,	Sept. 23	8	7	British Ord.	152—157	...	...
100,000	,,	June 7	7	7	Do. 7 p.c. Pref.	155—160	...	...
350,000	,,	,,	5½	5½	Do. 5½ p.c. "B" Cum. Pref.	112—117	...	...
120,000	,,	,,	4	4	Do. 4 p.c. Red. Deb. ...	99—103	...	101⅔
450,000	,,	,,	5	5	Do. 5 p.c. Red. Deb. ...	109—114	...	...
200,000	,,	,,	...	17/6⅔	Do. 3½ p.c. Red. Deb. ...	99—101	...	...
100,000	10	22 May '33	6	4	Cape Town, Ltd.	1—3	...	25/-
100,000	10	6 Nov. '33	4½	4½	Do. 4½ p.c. Pref. ...	1—3	...	...
150,000	Stk.	June 24	4½	4½	Do. 4½ p.c. Deb. ...	83—88	...	...
626,860	,,	July 22	6	6	Cardiff Con. Ord.	127—132	...	...
157,150	,,	Aug. 12	6⅔	5	Chester 5 p.c. Ord.	109—114b	...	...
98,936	1	Sept. 23	2/-	2/-	Colombo, Ltd., Ord.	1⅛—1⅛	...	...
24,500	1	,,	1/4½	1/4½	Do. 7 p.c. Pref. ...	20/—22/	...	...
609,204	1	Oct. 7	-/11/48	-/11/48	Colonial Gas Assn. Ltd. Ord.	19/6—21/6	...	...
296,053	1	,,	1/3 30	1/3 30	Do. 8 p.c. Pref.	24/6—26/6	...	...
1,775,005	Stk	Aug. 12	6	5	Commercial Ord.	100—105	...	104—104½
620,000	,,	Dec. 2	3	3	Do. 3 p.c. Deb. ...	85—90*	...	...
286,344	,,	Aug. 12	5	5	Do. 5 p.c. Deb. ...	121—126	...	...
807,560	,,	Aug. 12	7	7	Croydon sliding scale... ...	151—156	...	154½—155½
569,590	,,	,,	5	5	Do. max. div.	113—118	...	116½
620,385	,,	June 24	5	5	Do. 5 p.c. Deb.	123—128	...	...
542,270	,,	Aug. 12	10	7	Derby Con.	175—185c	...	...
55,000	,,	June 24	4	4	Do. 4 p.c. Deb.	100—105c	...	...
239,000	,,	Aug. 12	5	5	East Hull Ord. 5 p.c. ...	109—112	...	...
181,625	,,	Aug. 12	6	6	East Surrey Ord 5 p.c. ...	132—137	+3	...
175,609	,,	June 7	5	5	Do. 5 p.c. Deb. ...	120—125	...	123½
19,313,481	,,	Aug. 12	5½	5½	Gas Light & Coke 4 p.c. Ord.	27/—28/-f	-/3	27/4½—27/9
2,600,000	,,	,,	3½	3½	Do. 3½ p.c. max.	88—91	...	90—91
4,477,106	,,	,,	4	4	Do. 4 p.c. Con. Pref. ...	106—109	+1	107—108
8,602,497	,,	Dec. 2	3	3	Do. 3 p.c. Con. Deb. ...	89—91*	...	89—90½
3,642,770	,,	,,	5	5	Do. 5 p.c. Red. Deb. ...	115—118*	+2	116½—117½
3,500,000	,,	,,	4½	4½	Do. 4½ p.c. Red. Deb. ...	111—114*	...	...
270,466	,,	Aug. 12	6	6	Harrogate New Cons. ...	132—137	...	...
140,000	1	Sept. 23	1/7½	1/7½	Hongkong & China, Ltd. ...	1½—1½	...	...
213,200	Stk.	Aug. 12	6	6	Hornsey Con. 3½ p.c.... ...	130—135	...	...
5,600,000	,,	Nov. 4	14	8	Imperial Continental Cap. ...	185—195	+10	180—191
223,130	,,	July 22	3½	3½	Do. 3½ p.c. Red. Debs.	92—97	...	...
285,242	,,	Aug. 12	8½	8½	Lea Bridge 5 p.c. Ord. ...	175—180	...	...
2,167,410	,,	Aug. 12	6	6	Liverpool 5 p.c. Ord.... ...	133—135b	...	...
245,500	,,	June 7	5	5	Do. 5 p.c. Red. Pref. ...	105—110b	...	...
306,083	,,	July 8	4	4	Do. 4 p.c. Deb.	105—107b	...	...
165,736	,,	Aug. 26	10	8	Maidstone 5 p.c. Cap. ...	182—192	...	185
63,480	,,	June 24	3	3	Do. 3 p.c. Deb. ...	80—85	...	84
75,000	,,	Dec. 2	†10	†10	Malta & Mediterranean ...	205—215*	...	...
392,000	—	Oct. 1	5½	5½	Metropolitan (of Melbourne) 5½ p.c. Red. Deb.	98—103	...	106
231,978	Stk.	Aug. 12	5	5	M. S. Utility "C" Cons. ...	108—113	...	...
818,657	,,	,,	4	4	Do. 4 p.c. Cons. Pref.	100—105	...	104—105
360,075	,,	June 24	4	4	Do. 4 p.c. Deb. ...	102—107	...	...
148,955	,,	,,	5	†5	Do. 5 p.c. Deb. ...	120—125	...	...
125,000	—	July 1	3½	3½	Do. 3½ p.c. Rd. Rg. Bds.	97—100	...	...
675,000	,,	Nov. 18	†13	†3	Montevideo, Ltd.	48—53	...	50—51
2,061,315	,,	Aug. 12	5½	5	Newcastle & Gateshead Con.	25/—25/6df	...	...
682,856	,,	,,	4	4	Do. 4 p.c. Pref. ...	107—108d	...	...
776,705	,,	June 7	3½	3½	Do. 3½ p.c. Deb. ...	100—102d	...	...
277,285	,,	Oct. 21	5	5	Do. 5 p.c. Deb. '43 ...	105—106d	...	...
274,000	,,	Aug. 12	5	5	Newport (Mon.) 5 p.c. max....	113—118a	...	...
225,000	,,	Aug. 12	7½	7½	North Middlesex 6 p.c. Con.	170—175	...	174½—175
396,160	,,	Aug. 12	5	5	Northampton 5 p.c. max. ...	105—110	...	...
300,000	,,	Nov. 4	†7	†9	Oriental, Ltd.	163—168	...	...
416,617	,,	June 7	8	8	Plym'th & Stonehouse 5 p.c.	162—167	...	...
504,416	,,	Aug 12	8½	8½	Portam'th Con. Stk. 4 p.c. Std.	173—178	...	...
241,446	,,	,,	5	5	Do. 5 p.c. max. ...	110—115	...	...
114,000	,,	July 22	5	5	Preston 5 p.c. Pref.	106—111	...	...
321,961	1	Sept. 23	...	1/-	Severn Val. Gas Cor. Ld. Ord.	22/—23/-	...	22/—22/6
319,510	1	,,	...	-/10½	,, ,, 4½ p.c. Cum. Pref.	21/9—22/9	...	22/6¼
1,736,968	Stk.	Aug. 26	6	6	Sheffield Cons.	140—142e	...	...
95,000	,,	June 24	4	4	Do. 4 p.c. Deb.	102—104e	...	...
133,201	,,	Aug. 12	5	8½	Shrewsbury 5 p.c. Ord. ...	142—147	+7	138—147
90,000	10	May 27	‡3	‡3½	South African	3—4	...	...
1,061,779	1	Sept. 23	1/2⅔	1/2⅔	South East'n Gas Cn. Ld. Ord.	27/6—28/6	...	27/10½—28/3
845,016	1	,,	-/10½	-/10½	Do. 4½ p.c. Red. Cum. Pref.	22/3—23/3	...	...
450,000	Stk.	Aug. 12	4	4	Do. 4 p.c. Red. Deb. ...	100—103	...	...
6,709,895	,,	Aug 12	6½	5	South Met. Ord.	131—136	...	133—135½
1,135,812	,,	,,	6	6	Do. 6 p.c. Irred. Pf. ...	147—152	...	149—149½
850,000	,,	,,	4	4	Do. 4 p.c. Irred. Pf. ...	105—109	...	107—108½
1,895,445	,,	June 24	3	3	Do. 3 p.c. Deb. ...	88—91	...	89½
1,000,000	,,	July 8	5	5	Do. 5 p.c. Red. Deb....	115—118	...	...
209,820	,,	Aug. 12	8½	8½	South Shields Con.	171—173d	...	...
1,543,795	,,	Aug. 12	6	6	South Suburban Ord 5 p.c. ...	129—134	...	131—132
512,825	,,	,,	5	5	Do. 5 p.c. Pref. ...	121—126	...	...
500,000	,,	,,	4	4	Do. 4 p.c. Pref. ...	103—108	...	...
888,587	,,	June 7	5	5	Do. 5 p.c. Deb. ...	122—127	...	124
250,000	,,	,,	4	4	Do. 4 p.c. Deb. ...	103—108	...	...
647,740	,,	Aug. 12	5	5	Southampt'n Ord. 5 p.c. max.	115—120	...	117
121,275	,,	June 7	4	4	Do. 4 p.c. Deb.	100—105	...	...
350,000	,,	Aug. 12	5½	5½	Swansea 5½ p.c. Red. Pref. ...	112—117	...	...
200,000	,,	June 7	6½	6½	Do. 6½ p.c. Red. Deb. ...	98—103	...	...
94,000	,,	...	...	...	Do. 3½ p.c. Red. Deb. ...	97—102	...	...
1,076,490	,,	Aug. 12	6⅔	6⅔	Tottenham and District Ord.	149—154	...	151—152
409,835	,,	,,	5⅓	5⅓	Do. 5½ p.c. Pref. ...	130—135	...	...
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334,615	,,	Dec. 2	4	4	Do. 4 p.c. Deb. ...	100—105*	...	...
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108,330	,,	,,	5	5	Do. 5 p.c. Pref. ...	117—122	...	...
1,340,521	,,	Aug. 12	7	7	Wandsworth Consolidated ...	157—162	...	160—162½
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1,317,964	,,	June 7	5	5	Do. 5 p.c. Deb. ...	123—128	...	127½
338,300	,,	,,	4	4	Do. 4 p.c. Deb. ...	104—109	...	...
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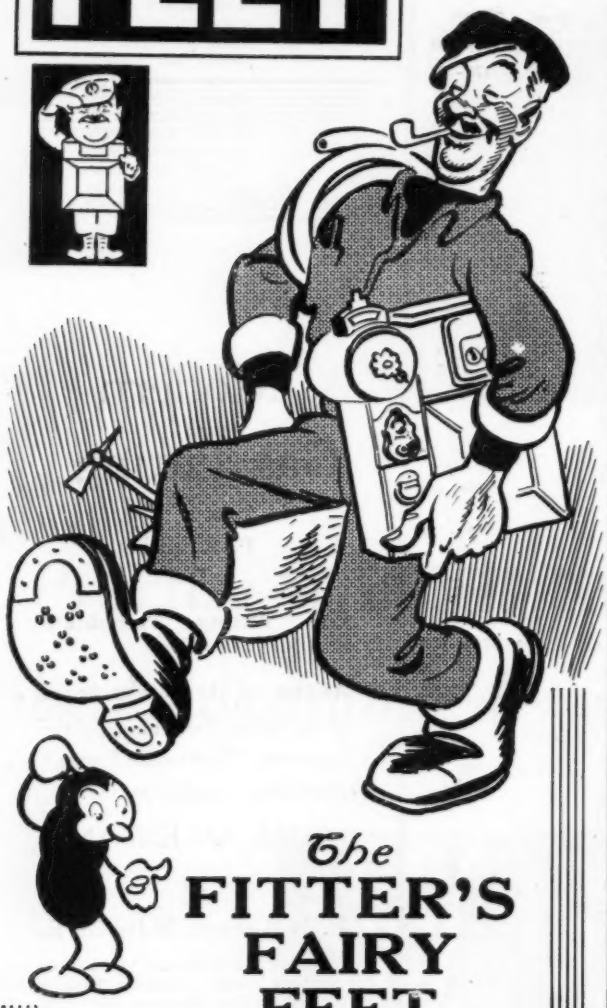

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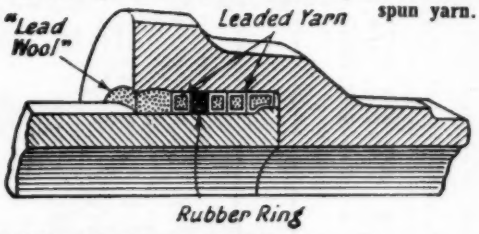

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